

After years of mocking the proverbial British obsession with pets and wildlife, the ANIMAL WELFARE lobby in America has emerged as an active force. Peter David reports from Washington on its impact (page 10)

A solution looking for a problem? Jon Turney visits the National Institute for Medical Research and talks to DAI REES, its new director (page 11)

ACADEMIC PRIVILEGE, if such a thing exists, carries with it a heavy weight of responsibility. In the first of two articles, John Passmore looks at the moral issue of academic freedom (page 15)



Rennie's progress: Lynne Rennie, author of 'The Education of a Woman'

Can there be a genuinely intellectual WORKING CLASS CULTURE? Ben Pimlott reviews Jonathan Rée's study of socialist culture in Britain during the first half of the twentieth century (page 17)

Youth training, the changing world of work, German vocational schools and graduate employment are among the subjects of a special report on EDUCATION FOR EMPLOYMENT (page 23-28)

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NEXT WEEK

Coal: fuelling success or strife?

Geoffrey Scammell reviews volume three of Fernand Braudel's *Civilization and Capitalism*

The great examinations shake-up



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The quiet of consolidation

The universities have come to the end of a quiet term – the quietest term they have enjoyed perhaps since the summer of 1981. Last term was occupied by but not over-occupied, by efforts to reply to the University Grants Committee's 28 questions. Next term may be filled, but probably not over-filled, by the debate that will follow the publication of the UGC's advice to the Secretary of State and precede the publication of the Government's Green Paper on its future strategy for higher education in 1985. But this term has been quiet and even calm, bar a couple of unresolved salary claims and a new threat to abolish academic tenure. At times it has almost seemed possible to catch a faint whiff of those golden years before 1981, or was it 1979 or 1973? Maybe just to catch a fleeting glimpse of how universities really should be when they are doing their real job rather than staggering away from the last crisis and into the next one.

But is this moment of reviving stillness significant? Is it the first faint beginnings of a recovery, of morale and equilibrium, within the universities – or will it fade away as the days lengthen in the autumn? Hearts may be lighter, but heads are likely to incline to the latter. Universities seem to have lived so long with crisis that their metabolisms may have been permanently modified to survive in a state of great debates and shifting plans.

So the robust and "realistic" view may well be that the calm which seems to have settled on the universities during the term is of almost no significance: it is either a brief moment of the stillness between the last storm and the next one, or entirely an illusion because far from slackening the pace at which radical decisions about the future of the universities are being taken, the finishing touches to its formal advice to Sir Keith Joseph. It will be sent to the Department of Education and Science at the beginning of Au-

gust, two months before the parallel advice being offered by the National Advisory Body on behalf of the polytechnics and colleges.

The object of all this activity by the UGC, first the 28 questions and now its advice to the Secretary of State, has been to pick up universities by the scruff of the neck and force them to face a perhaps unpleasant future. Rationalization of courses (and possibly institutions), selective research funding, greater deference to the demands of industry – this is the prospect which the UGC is urging the universities to contemplate without illusion and without regret. Serious contentment, however stoical, of such a future is hardly consistent with quietness or calm, whether interpreted as a recovery of lost equilibrium or more pejoratively as a long retreat to the bad old free days.

An extension of this robust view is to argue that the universities have almost missed the boat in terms of influencing future policy. According to the 28 questions their responses to this argument were largely inept, so effectively allowing the UGC under its new activist chairman, Sir Peter Swinerton-Dyer, a free hand in devising its advice. There is even a suspicion that the UGC's advice itself may be rather less sparky than Sir Peter may wish and that the future of the universities will really be decided in the debate surrounding the Government's Green Paper.

More sentimental, is that the reviving stillness of the past term has been deeply significant. According to this view it is the first real sign of a recovery of nerve on the part of the universities after the shock of 1981. Things are slowly but surely settling back to normal, not in a reactionary sense because the topography of British universities was changed for ever by the UGC's discriminatory distribution of the much reduced grant in that year but in the more modest sense that a new sense of equilibrium that incorporates those great changes is beginning to be felt.

Those who take this view are parti-

cularly concerned not to be identified as stick-in-the-mud conservatives. Many of them accept that the shake-up the universities received in 1981 was necessary and that the new priorities that have developed in the last three years have been valuable, but they insist that these changes must be incorporated in a new consensus within the universities. They argue that the constant rush from crisis to crisis will prevent the emergence of this new consensus and so far from forcing the universities to contemplate the future without illusion may undermine the changes in attitudes that have already taken place.

Certainly this seems to have been the view of the UGC under its former chairman, Sir Edward Parkes. The Parkes UGC of course was responsible for the 1981 distribution which so many in universities believe spread demoralization and destabilization; it never tried to deny that responsibility. Anything less radical would have been perceived by Government as inadequate and enabled the universities to put off facing up to the changed circumstances of the 1980s. But after 1981 the Parkes UGC worked to restore a sense of order and equilibrium, through the "new blood" and other initiatives. Until the arrival of Sir Peter the UGC seemed to be pursuing a policy of consolidation. Since his arrival it has chosen to promote excitement.

It remains a fascinating debate and a fundamental choice – the quiet of consolidation or the excitement of the continuing search for a better text. The *Higher Education System* (University of California Press, £21.25) entitled "The Uniqueness of Higher Education". He argues simply but convincingly that it makes no sense to evaluate universities as if they were business firms or vice versa. His list of virtues are: "Knowledge will remain a divided and imperfect substance. In its divisions and faults we come closest to the root cause of the many odd ways of the higher education system." A thought to sober the enthusiasts for excitement and to encourage the supporters of quiet consolidation.

The OU's secret trials

In quiet cowardly moments some of us may have hoped that the sociologists at the Polytechnic of North London for Sir Keith Joseph's periodic and crude flashes of desire to meddle with the content and teaching of courses. They might get burnt to a crisp by the successive discharges of over-mighty prejudice but the rest of higher education would be protected.

Sadly the Department of Education and Science's new attack on the Open University's social science foundation course on the familiar sneaky grounds of "Marxist bias" shows that Sir being an unfortunate exception. Indeed the latest case suggests that the ambitions of the Secretary of State and of his surrogate Mr David Hancock, as academic commissar, to act of higher education are escalating. Not even the stoutest defenders of sociology and applied social studies at PNL could deny that that polytechnic and those courses had been at the centre of long-lasting controversy, and the respectable hands of the Inspectorate, in other words there had been arguably some provocation and the process of inquiry was at least above board.

Neither mitigation can be pleaded to excuse the present behaviour of the DES towards the Open University over the social science foundation course. In recent years the OU has made a deliberate effort to steer clear of controversy – too deliberate, for some who would have preferred the profile. Following similar allegations imposed rigid new procedures to guard against any recurrence which all new

course material must satisfy – again, too rigid for some who feel that the intellectual development of students is not always best served by contriving balance.

Moreover the process of inquiry is difficult to defend. The inspectors have to keep to rules. Although they could not be used in this case, because a university is involved, that cannot excuse Mr Hancock's failure to establish an open and fair inquiry. What in fact happened was a negation of natural justice. The "charges" were unspecified and the "accusers" anonymous. The "jury" of professional economists was selected by the "prosecution", Mr Hancock, and remained secret. Finally there was no "trial", in the sense that the OU could offer a defence.

Anonymous denunciations, secret trials unrestrained by any fair procedures, rigged juries. It all sounds much more like what goes on in the Soviet Union than what should ever be tolerated in a free society. If we must have bias inquiries, then at least some proper procedures should be established. Perhaps the best model is provided by the way in which the former Social Science Research Council dealt with the allegations against the OU. Of course, we should not need to have bias inquiries. Intellectual opinions should never be made subject to even the most careful quasi-legal review.

Two further points must be made. The first is to remark on the extraordinary patronizing language, Mr Hancock uses in his letter to the vice-chancellor to describe OU students. They are he tells Dr Horlock, likely to be inexperienced and lacking in access

to other forms of instruction. "A course intended for such students and for such a purpose ought surely to be balanced," he argues. But such language is not only patronizing but ignorant. If OU students are so "inexperienced" (ie not in the Oxbridge or word class) in every sense of that word, that their intellectual diet must be precisely balanced, it suggests that they are incapable of any discrimination – and if that is true, perhaps they should not be in higher education at all.

The second point is that the criticisms of the economics block of the foundation course made by the anonymous "professional economists" (=Whitehall economists?) seem remarkably broad. Their 17-page report makes two broad charges; that the course material omits important topics, and that it propagates a consistently unfair because the purpose of the block is described in the title *The Economy: A Social Process* (its focus is on social relations not economic theory). The second charge ignores the difficulty of writing a broad basic course on the economy without resorting to generalizations, which others as dangerous distortions. It also suggests that it is possible to write such a synoptic account without a unifying theme. Worst of all this criticism rests on a naïvely mechanistic view of education. Knowledge is conceived as a pre-packaged product rather than as a process of change. The pedagogical and administrative style of the OU may occasionally reinforce this misleading impression – but that is no excuse for Mr Hancock's bectoring intervention.

Laurie Taylor



Ah Doctor Piercemüller. Have you a second?

Not really, Maureen. Not really. Just popped in to collect the post. Got the nippers outside the car. Anything that can wait?

Well hardly, Doctor Piercemüller. Professor Lapping urgently wants a list of your holiday dates.

Holiday dates? Yes, Doctor Piercemüller. Dates when you'll be away from the department. Abroad. So he can work out who'll be available for handling some minor administrative matters like admitting next year's students. He's preparing a chart.

Is he?

Yes, sir. Ah well, then. Yes. Well, actually I'm not likely to be exactly at my desk in the department all that much in the immediate future. Not physically present, you understand.

So shall I draw a line under the end of July?

Yes. And sort of into August. August 25? Something like that.

No, not quite. Right into August. You know, sort of... up to the... I see. So shall I put you down as here in September?

September. Ah, September. Yes, indeed.

September, then? No, not exactly, no. Now you mention it. No, I'm not actually going to be here in the first half of the bulk of September.

That's the whole of September?

What's that?

You'll be away the whole of September? The greater part. Yes, the greater part. But then I'm absolutely and completely free – no clear diary – from October 1 onwards.

The Monday before the beginning of term?

Yes. That's of course from midday onwards. The old light from Pisa doesn't touch down till Sunday evening.

Thank you, Doctor Piercemüller. I'll mark it on the chart. Fine. You going on holiday yourself, Maureen?

Not really, Doctor Piercemüller. I've only got a week left. Used up the other two at Christmas and Easter.

Ah well. Never mind. A change is as good as a rest.

Oh yes, sir. I count my blessings.

And whatever you do – take my advice – make sure you enjoy yourself.

Thank you, sir. Well see you in... erm... twelve weeks.

Yes, sir.

Ciao, Maureen.

Ciao, Doctor Piercemüller.

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Cash flow: four students from London's College of Distributive Trades expect to make a handsome profit from a month's trading in this Fleet Street fashion shop. The four, Julia Gardner, Karen Wheaton, Kay Mitchell and Virginia Smith, were asked to show a £500 profit on top of the £10,000 they were loaned to start the shop for their final year project. The money, put up by the Warehouse clothes chain, looks safe: the students expect to make several thousand pounds extra.

Advisory committee proposal sent back

by Nagio Crequer

A proposal that all universities should establish advisory committees, composed of external academics and lay people, to ensure that academic standards are maintained, has been sent back by the vice chancellors for further discussion. The recommendation for the establishment of external academic advisory committees in each subject or for individual departments was made in a paper written by Professor Philip Reynolds, vice chancellor of Lancaster University, and chairman of the academic standards group of the Committee of Vice Chancellors and Principals.

Some vice chancellors however felt the proposals were too specific, the US example was a bad one, and many universities had something along these lines anyway. So the proposal will be re-examined by the Reynolds group.

When shown the paper, Professor Randolph Quirk, vice chancellor of London University, declined to comment. He said since 1981 they had had a system of subject area committees covering the physical sciences, engineering, biological sciences and others, chaired by eminent external experts.

It was the intention that these bodies should produce quinquennial reviews of the quality and needs of the provision within each subject area, but in the first place they had been relied on in reaching radical restructuring decisions.

CNAA drops its quality rankings

by Karen Gold

The Council for National Academic Awards plans to continue giving advice on quality to the National Advisory Body, but has ruled out any repetition of its controversial quality rankings.

In a consultative paper sent to institutions the CNAA says that the defence of the overall quality of provision may mean it gives advice on the quality of individual courses, when it is proper to do so.

But there will be no comparison of one course with another, and each course will be judged against external criteria. No college will receive information about courses in another institution, and any CNAA comments will be sent to institutions for consultation before being passed on to the NAB.

The paper, which expects responses by the autumn, says the external bodies

of support services; the appropriateness of teaching strategies, and potential for further development.

Agreement would be sought with institutions on which factors were of particular relevance to each NAB inquiry, the paper says. The council repeats that it has no intention of itself recommending to the NAB that particular courses should be closed.

Institutions would be invited to provide their own appraisals and the latest external examiners' reports. The council's subject bodies which visit institutions and monitor courses, would not be involved at all.

A special working group has been established by the CNAA to look at its Partnership in Validation programme. The council agreed this week to have a special meeting in October to consider the new model of side-by-side validation and other alternatives.

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Sir Keith fails numbers resit, claim critics

by John O'Leary

The Department of Education and Science yesterday admitted that it had underestimated the long-term demand for higher education by up to 80,000 students. Its new projections show student numbers steady, or even rising, until the end of the decade.

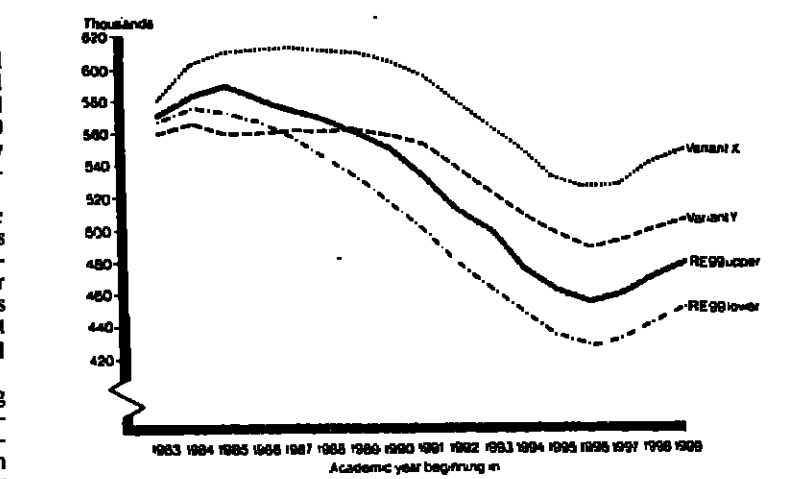
Statisticians at the DES have accepted a number of the criticisms made of their last projections, published in April last year. But their long-awaited revision of the figures will disappoint those who argued that demand would remain buoyant until the end of the century.

Although numbers are shown falling less sharply than in the previous estimates, they still reach a trough between 35,000 and 71,000 lower than the current student population by the end of the century.

As before, two different projections are given to allow for fluctuations in the popularity of higher education. The higher variant is based on the level of demand in 1981, the lower on that in 1983. The two produce projections which differ by as many as 60,000 students.

The most significant change in the figures comes in the later years of this decade, when the DES had forecast student numbers already beginning to fall. The latest report puts the student population at 562,000 on the lower assumption and 612,000 on the higher projections of 533,000 or 562,000. By the end of the century, the discrepancy has stretched to 80,000 on the more optimistic projection and almost 60,000 on the lower figure.

The rethink is based on three factors: social class, mature students and demand from women. The latest report also takes account of new information on A level achievement in schools and colleges.



Total student numbers full time & sandwich (Great Britain)

It is accepted that increased social mobility and a higher birthrate in the top two social classes will have a greater effect on numbers than had been estimated. But the picture is complicated by the upheavals which have taken place in the last 20 years in movements between classes. As a result, the statisticians believe that the effect on numbers will not be as dramatic as their critics have claimed.

Similarly with demand from women, the DES has accepted that its earlier projections represented an underestimate but it finds that demand has begun to level off. Mature students are estimated separately for the first time and a separate category of "younger mature students" is included to take account of those who defer entry to higher education but still begin courses in their early twenties.

The report received a mixed reception from two of the department's most vociferous critics: the Association of University Teachers and the Committee of Vice Chancellors and Principals.

Ms Diana Warwick, the AUT general secretary, said it was heartening that many of the union's criticisms had been taken on board but there remained many questionable assumptions.

"There is no evidence of concern on the country's need for skilled manpower at a time of major technical change. Sir Keith has failed this resit and must do better," she said.

"The vice chancellors were pleased to see 'a considerable difference' from last year's projections. But they added: 'If this is the DES's official view, what about the money? Over the next two fiscal years we are expecting a 4.5 per cent cut on the basis of the cash limits already announced and we face the possibility of 2 per cent cuts each year on top of that.'

Report on Education 1981, Demand for Higher Education in Great Britain 1984-2000, free from DES Publications Despatch Centre, Honeyport Lane, Stanmore, Middlesex HA7 1AZ.

Leader, back page

V-Cs cling on to tenure

Vice chancellors this week told Sir Keith Joseph, Secretary of State for Education and Science, that they were unable to bring about the changes he wanted in academic tenure.

Lord Flowers, chairman of the Committee of Vice Chancellors and Principals said in a letter to Sir Keith: "It is evident that in the light of the most recent inquiry we made of all vice chancellors that the majority do not believe their institutions could bring about the changes you envisage by their own volition within the timescale you have in mind."

"There are however a few who wish to proceed independently. . . . It now remains for you to decide what you want to do. We shall expect to be consulted further when you have reviewed the matter."

Vice chancellors feel that if Sir Keith intends to legislate on tenure by appointing statutory commissioners, he should now detail how this would be done, and explain their terms of reference. Sir Keith wants to end tenure for all new recruits to university teaching.

At the full meeting of the CVCP last Friday only two or three universities said they were willing and able to make the changes. Their identities were not revealed. A number of universities, which claim they do not have tenure said they thought they were exempt.

Several vice chancellors referred to the desirability of bringing in the Association of University Teachers to the discussion.



King Coal, past and future, 12-13

De La Salle in new closure threat

De La Salle College, Manchester, is the only college to be proposed for closure by the National Advisory Body's chairman's study group. The group considered the viability of 12 small diversified colleges before making its recommendations which goes to the NAB board on July 23.

It has encouraged a number of the colleges to look at mergers and associations, including West Midlands College which, after losing its non-teacher education courses in the NAB exercise last year, was one of those least expected to survive.

Since 1982, when it was ordered to cease teacher training, De La Salle has been defended from closure only by the Catholic community and its bishops. The Department of Education and Science last year gave it the option of being closed, or being assessed in the NAB college review.



A call for less talk, more action

So, with the degree results just announced, graduates now face the next hurdle - finding a job. And how appropriate that as 66,000 new graduates emerge onto the job market, joining the 10,000 plus still looking from last year, a row should break out between the Department of Education and Science and the Association of Graduate Careers Advisory Services over graduate unemployment (THES, June 29).

The DES and the Department of Employment joint venture, *Graduates and Jobs*, should be seen for what it is - a manipulation of statistics to steer a level students into subjects favoured by government policy. In a document that is being distributed free to all secondary schools, it might have been as well to point out for example that a third of all graduate vacancies are open to students of any discipline.

There is little doubt that the AGCAS survey is a much more even handed analysis of graduate unemployment. It should also be said that at a time of increasing demands on declining resources, many students will be thankful for the work undertaken by their local college careers service. But the AGCAS survey presents its own problems.

Prospects for graduates may have improved slightly last year, but only compared with 1982 - the worst year for graduate unemployment since the war! Twenty per cent of vacancies notified earlier in the year may still be notified, but only because employers can afford to be highly selective, while graduates have to take what they can get. One should be pleased that the research councils will offer 370 more awards in 1984 than in 1983. But, in the context of the thousands of graduates looking for openings that is a small, albeit important, drop in the ocean. Above all one should remember that at a conservative estimate, graduate unemployment stands at over 13 per cent.

Next year will see roughly the same number of graduates as in 1975 but a very different job market. Employers will offer fewer openings, and be more selective in demanding graduates for jobs that previously required only two A levels.

The pressure on graduates is much greater and their expectations lower - the average starting salary has declined in real terms by 12% in the last four years - while the strain on careers services continues to grow.

Given the amount of resources spent on training graduates, now might be the time for the Government to consider how it can best use them. Less money spent on glossy packaged aims at manipulating student demand to meet fiscal policy, and more money where it is needed - in grants to the large graduate employers to generate jobs and to college administrations to ensure that essential careers services are maintained - would be a welcome first step.

Then the Government might address a more general and, to be honest, more important question. How can one justify reducing opportunities in higher education on a monetarist whim when as a nation we spend £1.5 billion - half as much again as our North Sea oil revenue - to keep 3.5 million people on the dole? Any long term hope for higher education or for a real reduction in levels of unemployment rests on a sensible and positive response to that question.

John Fallon

The author is a member of the executive for the National Union of Students.

Letters to the editor

Professor Rex and ESRC research

Sir, - The story published in *The THES* last week that the Economic and Social Research Council is proposing premature retirement is entirely untrue. What is happening is that in the discussions about the move to Designated Research Centre status and to a location within the University of Warwick, discussions have been held to ensure that there is an existing member of the Warwick staff who would have responsibility for the affairs of the unit.

Professor Robin Cohen and I have had many discussions about the desirability of his taking on this role and I understand that he will shortly decide whether he wishes to do so. For my own part, I have an enormous task of writing up the results of a number of successful research projects over the past few years and I will probably do this through a short-term association with another university, but I have no intention whatever of retiring and propose to go on working to achieve the major purpose of the research unit on ethnic relations, namely of mobilizing research evidence to assist in the process of preventing Britain from becoming a structurally racist society.

Yours faithfully,
PROFESSOR JOHN REX,
University of Aston.

Sir, - You report on the future of this council's research units (*THES*, July 6).

It is totally untrue, as you allege, that the present director of the Research Unit on Ethnic Relations at Aston, Professor John Rex, has been

"urged to take early retirement." Yours faithfully,
SIR DOUGLAS HAGUE, Chairman,
Economic and Social Research Council.

Sir, - Negotiations between the ESRC and the staff of its four research units are at an extremely delicate stage. It is, therefore, particularly unfortunate that your coverage, incorporates some errors on key issues.

The most mischievous allegation is that staff at the Aston unit oppose the suggestion that Professor Cohen be invited to take over as director if the proposed relocation to Warwick goes ahead. At the time of publication the staff have had no opportunity to meet Professor Cohen and explore with him possible implications of this change. There was a clear agreement among the staff that these should not in any way be prejudged and their minds were open on this matter. Since then staff have met with Professor Cohen and have had a very fruitful exchange on the future direction of research at the unit, should he be appointed co-director with Professor Rex.

More generally, it is incorrect to state that the staff are engaged in a "just ditch bid" to retain the unit mode of funding. We believe that the ESRC is taking the wrong decision for the wrong reasons; however, we recognise that the change to Designated Research Centres has been exhaustively debated within the council and that there is now nothing to be gained by renegeing the ground of these arguments.

Our concern, then, is for the equitable treatment of the staff whom we represent. Your article points to one of the major problems, the non-contributory superannuation arrangements. It should be stressed that this problem arises from the inability of the University Superannuation Scheme and the then SSRC to agree in 1976, on terms which would have allowed staff to join the university scheme. However, since that time, the "benefits" to which you refer have generally been offered in negotiations between unit directors and staff on starting salaries. A simple transfer to university employment and USS will impose a net pay out of between £350 and £1,000 per annum on existing staff. Those staff will enjoy no greater security of employment: indeed, in most cases, this will lessen.

This is not the only problem we are working with. Other difficulties arise from the anomalous legal status of unit staff between statutory and Civil Service redundancy entitlement and from the weakening of the contractual terms of senior staff. These, of course, are to say nothing of the general disadvantages which attach to research staff in some universities. We are, however, confident that these can be resolved with goodwill on both sides.

Yours faithfully,
ROBERT DINGWALL, PAUL MARINSON and JOHN SOLOMONS (Staff Representatives, ESRC Research Units at Oxford, Warwick and Aston)

Graduate jobs

Sir, - John O'Leary's article entitled "Why the statisticians went to war" (*THES*, June 29) gives a very fair account of the differing approaches of the Department of Education and the Association of Graduate Careers Advisory Services in *What Do Graduates Do?* I do not wish to involve myself in the controversy that he describes but I do believe that the DES/Department of Employment deserve some congratulation on what they have produced. The real origin of this publication was a recommendation of the Select Committee on Education, Science and Arts in its 1980 report on the organization and funding of higher education that "the Government should publish information about employment for use by pupils in the schools, their parents and their teachers".

The committee argued that past attempts at the centralized planning of higher education had not been successful and that a greater reliance on the "free" market of student choice would provide a more responsive and economically efficient higher education system. Research had shown that schoolchildren responded quickly to market signals but that there was no mechanism for providing such signals in a clear and comprehensive way. Schoolchildren too often overreacted to one-off stories in the media about a glut of graduates in a particular discipline.

For such a policy to be effective, therefore, there had to be a better educated market. In putting this forward, the committee quoted with approval the view of the first report of the United States Carnegie policy studies in higher education, *Three Thousand Futures* that "students, particularly as they get good advice from counselling agencies... can probably make as good decisions by and large as planners. And the process (of deciding where contraction is to take place) is so much easier politically".

Graduates and Jobs seems to fulfil very much the objectives that the committee had in mind. Yours faithfully,
MICHAEL SHATTOCK
Registrar,
University of Warwick.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Spiritual polygamy

Sir, - As an anthroposophist, teaching in a college of higher education and enjoying the academicism, I take exception to Peter Clarke's rather glib interpretation of Geoffrey Aher's book (*THES*, June 29). In particular, this reference to the "mystical, transhumanist, Steiner", whom people like myself are said to revere. Also the concept of a patriarch (substitute ideal father) who devised an "intricate if not always logically consistent metaphysical system". Steiner was a humanist and seer and although some adherents to "occult" or "spiritual" philosophies follow the latter slavishly, anthroposophists (especially second generation ones like me) never met Steiner, do not revere him, but recognize that his gift to civilization requires stringent disciplining of thought processes along the path of self-development (as seen by Maslow).

The presentation of data as seen from different standpoints in various of Steiner's many books, does not display inconsistency in logic. Rather, new dimensions to existing concepts can be discerned in the texts, each relating to the subject under discussion and fitting into the overall network of ideas - some of them extremely complex.

A true anthroposophist is one who has developed these ideas for himself in a consistent and realistic manner, working with them in day-to-day living.

The proof of the pudding is in the eating and no reference is made to the origins of the 18 middle-class con-



Rudolf Steiner: open mind

verts. Of my own contemporaries, one an eye surgeon, one a psychiatrist and one a professor of physics at a well-known university, only one had a "father problem" in that his father was killed in the war.

We all attended a Rudolf Steiner school in Gloucestershire and three of us had anthroposophical parents. (There were others - but space does not allow a study of these and the perspective of their broad-spectrum background and subsequent development).

Anyone wishing to appraise the value of Steiner's philosophy should visit one of the many schools and see for himself - perhaps interview the 18-year-olds in their final year.

All that Steiner ever asked was for an open mind... Yours faithfully,
ARMOREL HEATLIE
18 Meadow Road,
Pinner, Middx.

Joint validation

Sir, - Not all of us at Newcastle Polytechnic are as convinced as members of our directorate and our academic registrar (*Letters*, June 29) on the merits of taking the "next logical step" from joint validation. This step, institutional accreditation by the Council for National Academic Awards, is clearly inspired by the example of the universities with their independent Royal Charter. The CNAA obviously has its faults, but the processes it requires have great strengths too, and in many cases the

CNAA has played a progressive role in supporting courses and institutions. Sadly, the system of external examination does not work well enough to ensure a minimum uniform and adequate standard in the whole university sector and the universities ought to beajoled or encouraged to move closer to the CNAA model rather than polytechnics avidly pursuing university status. Where the CNAA has been forced to intervene in polytechnic departments it does appear to have been generally beneficial and avoided the worst faults of the university system.

Classical loss

Sir, - Some 18 months ago the national press reported the saving of a full-time post in classics at Keele University by means of a proposal on the part of each member of the department to contribute part of their salary in order to protect, as they hoped, the long-term future of that department and the short-term prospects of a temporary colleague. Eighteen months on and the classic department itself faces the possibility of official "closure".

When interviewed by *The THES* back in November 1982 as the temporary lecturer in question, I was asked whether the scheme was a gimmick designed to attract publicity on the department's behalf. I replied that it was seen as the only way that the department could forcefully demonstrate its commitment to the quality of its teaching.

Eighteen months on and that vision of a corporate enterprise offering a quality degree in classics at Keele is merely a part of antiquated history, a small and perhaps relatively insignificant episode in the decline of an educational industry. Should one lament the threatened closure of the classic department at Keele? Any judgement on that question inevitably depends upon the value that is attached to the humanities as a whole both at Keele and elsewhere. But the importance of classics apart, on the taste is profound for all those whose selves long outlived any sense of vision, own only managerial interest at heart, and are musingly debating the futures of my rare colleagues on the unedifying basis of unit cost expenditure.

Yours sincerely,
Dr R. S. J. GARLAND
University of Keele.

Equally important, in my view, is that while polytechnics are being pressed to become more and more "cost effective" - to put it at its lowest - they will increase their vulnerability if they try and detach themselves further from the CNAA. If CNAA can perform an important protective role and insist resources are made available as a condition of course validation. Yours sincerely,
ANDREW MCCULLOCH
Elected staff member,
The Council of Newcastle Polytechnic

Manual workers get improved offer

by David Jobbins

University manual workers have been offered a joint study of the low pay problem as part of a package which would give most of them a rise of more than 5 per cent this year.

Leaders of the National Union of Public Employees meet today to consider the employers' latest offer of £3.55 a week and to decide whether to recommend it to their members and halt industrial action. The offer would increase weekly earnings to between £71 and £87.

With other gains such as extra leave for long service, increases in shift allowances and sickness pay, the unions believe the package is worth about 5.2 per cent. The wage offer alone is worth 5.2 per cent to workers on the lowest grade.

The terms of reference for the joint "no commitment" study recognize that low pay is not a problem confined to the universities which are also constrained by cash limits. It will compare earnings by manual and ancillary workers in the universities with comparable work outside and, at the

unions' insistence, average earnings in the universities with the average for the rest of the economy.

A report is to be made by February next year, in time to feed its findings into the 1985 salary negotiations.

If the offer is accepted by the unions and, as seems likely, clerical staff and technicians also reach agreement, lecturers will remain the only group yet to come close to settlement. The Association of University Teachers, which has not yet formally been offered the 4.6 per cent package rejected by its national council in May, is seeking a meeting of Committee A, the first stage of its negotiating machinery, for the end of this month.

Its executive reviewed the position at the weekend, and expressed disquiet that settlements on pay scales in the universities were barely reaching 5 per cent even for special cases such as the manual workers when the traditional comparison - clinical academics, civil service and further education lecturers - were likely to do better.

To avoid the possible consequences of excluding the Association of

Polytechnic Teachers from preparing the case for arbitration the National Association of Teachers in Further and Higher Education last week took the lead in establishing an ad hoc arbitration teachers' panel.

The APT is represented on the panel, which is chaired by Natfhe's Mr David Triesman, and is entitled to make its own submission and express its views on the final draft. But it is not represented on the sub-committee which will draw up the case - the only non-Natfhe member is Mr Harold Farnsworth of the Association of Principals of Colleges.

An announcement on the composition of the panel from the Independent Advisory Conciliation and Arbitration Service is being delayed by a disagreement between the local authorities and unions over the independent chairman. The unions prefer Sir John Wood while the local authorities have accepted only Mr Stuart McDowall of St Andrews University from the list circulated by ACAS.

Leader, back page

TV output now subject to scrutiny

by Maggie Richards

Television programmes made by the Open University will in future be subject to the same rigorous scrutiny as written material, and the policy will affect any remake of programmes associated with units accused of Marxist bias.

The programmes made in conjunction with the economics element of the OU social sciences foundation course last week came in for heavy criticism in a report prepared for the Department of Education and Science by a group of "professional economists". The report charges the television material with "some of the grossest examples of lack of balance".

But the television material was, in any event, under review. Dr Mike Fitzgerald, dean of the OU's social sciences faculty, said this week.

"We have agreed the three programmes involved will not be shown in the form in which they were presented this year. Whether the course team make new ones is at the moment being discussed," he said.

The original television programmes were not subjected to the same external assessment as the course materials because BBC scheduling has always prevented such processes being used by the university. But last year the university's visiting committee stepped in and proposed that in future all television programmes should undergo assessment in the same way as printed material.

Dr Fitzgerald said it was a move which had supported wholeheartedly because it allowed alterations to be made to programmes, and this had not previously been possible.

Written material used for the economics element of the course was this week defended by an eminent academic member of the external assessment team.

The "professional economists" commissioned by the DES had been wrong to consider the units in isolation and treat them as an introduction to economics instead of reviewing them in the context of the entire foundation course.

In presenting the course the OU had made a "brave" decision to give a broad picture of economics instead of concentrating on individual theories. "It is an appalling task to write an entire perspective of the social sciences. It is a very difficult thing to do, but they have been more successful than any other university I know of."

OU's head on the block, page 11

Warm welcome

Severston College of Further Education in Edinburgh is to run courses for fire officers in three Scottish brigades through a Manpower Services Commission Open Task contract.

The £92,000 contract will allow college staff and training officers from Lothian and Borders, Strathclyde and Tayside brigades to develop open learning materials for the fire brigade station officer's examination.



Further study: Mrs Martha Gordon, who has just completed a first degree at Lancaster University, has now registered as a postgraduate student at the age of 77. Mrs Gordon, believed to be the oldest university student in Britain, will work for two years for an MPhil in archaeology.

Career structure drawn up

Plans for a more orderly career structure for university research staff have been drawn up by the university lecturers' union. They are to be considered next week by the contract research staff committee of the Association of University Teachers then circulated to branches before its national council in December.

The consultation exercise resulted from differing views on the executive over how to tackle the problem of job security among research staff. The new proposals represent something of a departure from the traditional AUT view that academics should engage in a mixture of teaching and research to structure was anathema.

Under the proposals universities will be urged to establish contingency funds to bridge the gap between contracts, and to encourage career development for researchers. The policy calls for greater transferability between projects, establishment of re-training procedures, and demands the same conditions of employment for research and teaching staff.

Although Bristol University has already established a contingency fund, Scotland is leading the way in improving conditions for staff on short term contracts.

Glasgow University last week announced it had abolished waiver clauses requiring contract staff to sign away rights to redundancy pay and unfair dismissal claims.

It follows five months of negotiations with the local AUT and follows Edinburgh which abolished waiver clauses last year. The two universities employ nearly 900 research staff.

SERC makes its case for international collaboration

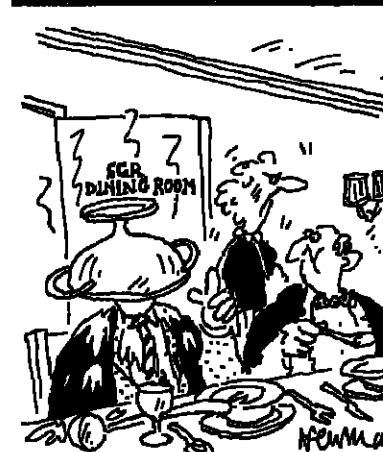
The Science and Engineering Research Council has made new bids for participation in a European synchrotron radiation source and for a new super-computer in its "forward-look" for 1985, submitted to the Advisory Board for the Research Councils.

Papers put before the House of Commons Select Committee on Education, Science and the Arts show the SERC is still arguing for new expenditure, as well as resubmitting last year's failed bids for a new UK-led space project in x-ray astronomy and to fund its new directorate for application of computers to mechanical engineering.

of the SERC, made a strong plea for recognition of the importance of international collaboration in large-scale projects when he appeared before the committee this week to answer questions on the science budget.

"One sees other countries taking a much more coherent national view of the value of scientific collaboration," he said. The SERC's memorandum to the committee says many fields are moving towards international collaboration as they become more costly. Synchrotron radiation is a good example, it suggests.

The SERC points out that the success of the synchrotron radiation source at Daresbury in Cheshire



NEVER DISCUSS YOUR SECOND MORTGAGE DURING PAY NEGOTIATIONS WITH THE MANUAL WORKERS.

Aston plans compulsory redundancies

Aston University has told the Department of Employment it intends to make 150 staff redundant, and this week its council gave the go-ahead for compulsory dismissal.

The group most at risk is technical staff, where the university claims it has a surplus of 45 people. Mr Peter Tebbitt, the university secretary, said this week it was likely that compulsory dismissal notices would go to some technicians on August 1.

A move to delete the reference to compulsory dismissal from the council motion failed by 11 votes to 7, with a large number of abstentions. The campus unions had organized a silent lobby of the meeting, supported from unions from other universities.

Academic staff are unlikely to be affected because of a senate ruling in July 1983 against compulsory dismissal.

Mr Tebbitt said the figure of 150 included a number of voluntary redundancies which had been foreseen. These included six academic staff, and 68 non-academic staff, who would be leaving at the end of September. He expected a further 10 academics to go on a voluntary basis which left about 80 non-academics surplus to requirements.

He said unless there were unusual circumstances in some departments, he doubted there would be any need for compulsory redundancy among clerical, secretarial and academic related staff, and the chances of involvement by manual staff were small.

Although the university had balanced its books in the last three years, a projected deficit of £107,000 next year assumed the departure of 60 support staff. Otherwise the deficit increased to £500,000.

This week the Association of Scientific, Technical and Managerial Staffs declared its total opposition to compulsory dismissal and was drawing up plans to resist the proposals. The Association of University Teachers was also meeting to discuss the development.

At Keele University, the council accepted a plan from its senate for a reduction of 20 academic posts and savings of £600,000 over three years, but said they wanted more detail.

Escape route rejected

by Patricia Santinelli

Polytechnic teacher educators have rebelled against a Department of Education and Science diktat. They have categorically rejected a move to distort BED courses to allow academically sound but professionally inadequate students either an early escape route or an alternative qualification.

The order is contained in the DES circular on the approval of teacher training courses. It states that BED courses should allow for the early transfer of students who find they are unsuited to teaching. Those who completed the course academically but failed it professionally would be awarded an alternative qualification not carrying qualified teacher status.

The Polytechnic Council for the Education of Teachers, on which all polytechnics education departments are represented, says that like any other course the BED is designed for success rather than failure.

"We have every sympathy for those students unable to sustain the rigours of the teaching profession. We are not however prepared to distort course structure to facilitate transfer to another course without loss of time. Neither would we expect our colleagues responsible for other courses to do so," it says.

The council points out that the DES's wish that courses should be designed to locate potential failures early on in the course implies there should be significant early exposure to schools and children together with the necessary preparation. In the case of primary, broad syllabus coverage would be necessary to give the experience validity.

"This is turn implies a substantial time allocation to professionally orientated activities with a consequent reduction in straight academic work, the council says. A BED course designed along these lines whatever its professional merit cannot be compatible with more orthodox BA or BSc courses."

It adds that while the responsibility of awarding an alternative qualification rests with the validating bodies, it finds it difficult to come to terms with what is essentially a failed BED. It therefore does not see the award of alternative qualification as a serious possibility.

The council suggests that a solution to the problems of students whose professional weakness did not become apparent until later, would be to amend the grants regulations to prevent them losing their mandatory awards.

This would allow BED students who were professionally unsuccessful after two years to retain their mandatory grants on joining the second year of a new course. The numbers involved would not be large and cost therefore not high. Such a strategy would be infinitely preferable to that of distorting courses," the PCET says.

The Association of Graduate Careers Advisory Services has issued a circular informing institutions that they must not select their postgraduate education students on the basis that their degree is in a subject relevant to the school curriculum.

It points out that the DES circular asking for this has now been superseded. The department is now only asking that the level and content of candidates' initial degrees should be appropriately related to the work of primary and secondary schools.

Council. Sir Douglas said servicing of the ABRC by the Department of Education and Science was inadequate.

Professor Kingman endorsed Sir Douglas's wider point that the ABRC was part of a civil service structure dedicated to administering existing activity rather than asking what new things need doing. "There is too much of a tendency for Government departments to think how to stop people doing things," he said. Professor Kingman also told the committee Britain put too much effort into defence science. He said there should either be a shift in the balance of efforts to bring defence science closer to the work of research councils and universities.

DON'S DIARY

SUNDAY

The last time I tried to write one of these, I made the mistake of showing it to colleagues who said it was far too cheerful and didn't demonstrate how dreadful it was to be a college principal. Well, it still isn't dreadful, but this week turned out to offer a wide range of experience and emotions. We started off at 10am in the Mayor of Penrith's parlour, assembled to judge a local, small business idea competition organized for the third year by John Lee, our local MP and Noel Wild, editor of our local paper, with the help of three or four local businessmen. The successful applicant turned out to be a young woman who I'm sure is going to be a raving success with her children's wear, but who left art college without completing the course!

After lunch, on to the college to catch up on correspondence and receive my first obscene anonymous phone call from a gent with a handkerchief in his mouth who asked me if I like sex and travel, and described me as a part of the human anatomy not normally found on men!

MONDAY

As usual we start the formal week at 9.15 with a heads of department meeting; also as usual for this term, we are much preoccupied with the cuts which are facing us and they are bad news for anything material like books and machines. Even after 17 years in the job I'm still slightly surprised we should be budgeted to develop high tech skills etc on the one hand and be told to reduce expenditure on the other, and often by the same people. However the cuts are going to be staff retrenching early with enhancement and for those few gaining promotion as a result. I'd certainly defy anyone to suggest that this bit of the education service is not slim, to the point of anorexia.

Lunch at Granada Television with Chris Kerr, to discuss *Jobwatch*, a series designed to highlight areas of growth and future training needs; it seems there is still potential but apart from more effective and flexible training, we apparently have to become better salespeople in the international market place.

Back to college for staff interviews and further discussions on the reorganization, followed by dinner at Gwathorpe Hall, the seventeenth century house which we manage for the local education authority and the National Trust. The object of the exercise was the now routine one of raising money to augment Manpower Services Commission projects to restore the great barn and the estate block.

TUESDAY

An early rapid sorting out of my mail with Elsie, my world class secretary, followed by a brisk trip to Red Rose Radio at Preston, to record this week's and this year's last *Hand Up*, a weekly education magazine. With out doubt the star of the show is Ted Fox, a soon to retire, extremely fit, compassionate and cheerful primary head. Being orphaned, sent to a seminary, joining the infantry in the Second World War, and working in some poverty stricken areas, have not dimmed his delight in his job. Back to college for another round of staff talks followed by a brief discussion with John Miller, director of Penrith Heritage Centre, which is also a partial responsibility of the college.

WEDNESDAY

Incur possible wrath of many by not attending county principals meeting in the morning in order to concentrate on staff reorganizations and other less glamorous management matters. Also realizing that I'm due

to leave for the University of Texas in three days, pay some attention to travel arrangements as well as, like a juggler in urgent need of the men's room, throwing some "administrative balls" high enough in the air not to fall back on my floor until my return.

Another reason for skipping the principals' meeting, is that there is yet another one tonight, where there is a well meaning attempt to explain why we are going to be short of money and why we should be better managers. As soon as the discussion starts it costs me £10 to lose as a result of bets I've taken that I won't rise to the bait and say anything tonight. In addition, I'm disappointed to miss what turns out to be a very successful musical event put on in town by our music foundation course.

THURSDAY

Probably the saddest day of my professional career when I hear that one of our brightest students has died in not easily understood circumstances. Staff and fellow students have to be told and we are all struck by a wretched feeling of helplessness for the student, relatives and friends.

However, in between times, the college business continues around its five major and five minor sites and we discuss again the possibility of buying a bankrupt modern leisure centre as a new catering department. Just to show we are not too rigid about these matters, lunch with Eric Mudge from Ampleforth at Gwathorpe.

I also hear from Florida Junior College, our twin college, with which we've exchanged numerous staff; and given today's tragic event, I'm very sad to learn that a young colleague there is dangerously ill and I arrange a visit for next week. We place a good deal of stress on internal exchange, which is a lot of trouble in management terms, but has increasing value as staff development.

Into Manchester for an evening television meeting, the social part of which results in a longish conversation with a Coronation Street star about handicapped children; make a note to try and involve him in the college's new scheme.

FRIDAY
I'm very conscious of what needs to be done before I take the 8.30 shuttle to London on Saturday and have warned Elsie to be on good form and not to book too many appointments, however I see staff to discuss the reorganization of adult education in general and the Open College dimension in particular. Talks to others about our new Drop-in Skills Centre (MSC project) which is successful, but making increasing demands on staff.

At 3.30 we have another heads meeting as my absence next week will be followed by the Whit holiday; we still haven't had confirmation of early retirements but make decisions on the basis that we have. I can see a new, exciting system evolving and new, exciting system evolving.

Finally, a long session with Margaret Hughes, soon to be our only vice principal, who refuses to let me go without listening to a number of points.

SATURDAY

The Super Shuttle is late, but not to worry, so is Pan Am to Austin via New York, which gives a splendid opportunity to think, undisturbed by telephones, television or conversation (thank goodness for Sony Walkman type devices in this last respect). Think about writing a Don's Diary based on this week; I wonder if it's typical and conclude that it's not, thank goodness.

Feeling also on the United States which I've usually not visited for a year; most of my guests turn out to be right but not as "technicolour" as I thought. Am met at Austin by retired Marine Colonel George Baker, now a member of the Professor John Rouché's University of Texas "Flying Circus", which is one of the most efficient, effective and stylish educational organizations in the western world.

Twenty-six hours after arising in Nelson, "to bed" in Austin, after orange juice, bacon and two eggs "over easy".

David Moore

The author is principal of Nelson and Colne College, Lancashire.

Validating bodies slammed

by Karen Gold

The two main polytechnic validating bodies - the Council for National Academic Awards and the Business and Technician Education Council - need to change significantly, according to many polytechnic responses to the Lindop inquiry.

The Government set up the inquiry in April to look into validation of first and higher degree courses in the public sector. It is chaired by Sir Norman Lindop, principal of the School of Osteopathy and former director of Hatfield Polytechnic.

The most vehement attack on the CNA comes from Plymouth Polytechnic.

"It is difficult to maintain confidence in the CNA's capacity to ensure uniform and appropriate academic standards when there is so much variation between its subject boards," it says. "An increasing number of CNA visiting panels contain members whose competence is far below that of the course team being involved."

In short, so far as institutions such as ours are concerned, the CNA is doing an unnecessary job badly."

Some polytechnics object to the cost. North East London Polytechnic estimates that the cost of documentation and staff time means validation costs the polytechnic £250,000 a year. Numerous polytechnics point out that the cost was acceptable in earlier times, but is impossible in the present lean ones.

Another criticism is of the bureaucracy. The CNA, the BTEC, the Inspectorate and professional bodies could undermine standards because of the time and attention they

demand, according to Coventry (Lanchester)'s submission. The CNA's role in supplying the National Advisory Body with advice meant institutions would feel obliged to provide it more detail, according to City of London Polytechnic.

The council's partnership in validation scheme does not avoid these problems, according to Portsmouth. It says that while the present arrangements are cumbersome, expensive and wasteful, the Newcastle model of partnership would be an unacceptably extended and expensive apprenticeship.

But the Polytechnic of Wales applauds the way in which the CNA in April to look into validation of first and higher degree courses in the public sector. It is chaired by Sir Norman Lindop, principal of the School of Osteopathy and former director of Hatfield Polytechnic.

There is support for the CNA from the new rector of Liverpool Polytechnic, Mr John McKenzie, who praises the council's provision of opportunities to thoroughly evaluate aims, objectives and direction of a course. He says this gives the CNA an advantage over university validators who, in his experience, range from the exceptional to the appalling.

The NELS's submission says that public sector higher education has been well served over the years by its validators. Universities that validate college courses have not been subjected to such thorough scrutiny as those under the CNA and the BTEC, and should be now, it says.

South Bank says the CNA's achievements have benefited generations of staff and students, while City of London praises both the council and BTEC.

Polytechnic criticism of the BTEC is

generally fiercer. Its validation procedures are cumbersome and lack focus, face discussion with an external peer group, according to Thames. It says: "The rigidity of BTEC requirements on such matters as course structure and content creates unacceptable frustration for institutions with substantial experience of curriculum design."

External peer group evaluation in addition to the university system of external examiners is praised by every one and is included in all the alternative models proposed in the submissions. These range from step by step models proposed by Birmingham to radical changes.

Birmingham also propose a regional system of validation. City wants a system based on programme areas and graduate output. Coventry wants accreditation for the institution to both CNA and BTEC courses. But South Bank and Preston want universities included in an accreditation model. The BTEC design, art and technology courses and CNA should all be amalgamated according to Wolverhampton into a streamlined body.

Many polytechnics define "major" institutions which should be freed of validation restraints. The widest definition comes from Trent. Institutions with a high proportion of advanced work and 15 years experience of validation and approval should be presumed to be experienced and have the will and objectivity needed to sustain standards, it says.

Others are more restrictive. City should be primarily the effectiveness of internal monitoring procedures and quality of work, says Middlesex. Scholarship, research, size, diversity and management should also count, say Portsmouth. All polytechnics and other institutions with more than 10 per cent advanced work should do, according to Wolverhampton.

Plymouth wants the committee at the Inspectorate to draw up its criteria, with advice from the CNA.

Many submissions ask why the universities were not included in the inquiry. Dr Peter Thompson, professor of the polytechnic of Central London, warns the committee that it needs to define the academic issues more fully.

The Association of County Councils, agrees that present arrangements are cumbersome and bureaucratic. The National Association of Teachers in Further and Higher Education praises the CNA, and does not accept that the administrative burden of validation outweighs its advantages. The Association of Polytechnic Teachers says that the roles of the CNA and the BTEC in public sector institutions should be reduced and polytechnics should award their own degrees.

'Waste of time' to use CNA

by Olga Wojtas

Scottish Correspondent

There is a considerable waste of time, effort and resources in using the Council for National Academic Awards for validation in Scotland when the Scottish universities could be used instead.

This is the response to the Lindop committee from the Scottish Business Education Council, which says resources are wasted in taking primarily English panels through the differences in the Scottish education scene.

This could be justified if these were the only experts. But there is considerable expertise in validation among the Scottish universities which are rarely used in the CNA system, says SCOTBEC. It hopes the committee will recommend that the universities be much more involved in the integration and planning of higher education provision through

BTEC draws back from devolution

Two of the three validating bodies

giving evidence to the Lindop committee - the Council for National Academic Awards and the Council of Validating Universities - are prepared to devolve some of their activities. The third, the Business and Technician Education Council, is not.

All three papers describe their validation processes. The CVU points out that there is not one model of university validation in colleges; local arrangements differ. Because of that, they are flexible, responsive and clearly achieve parity of academic standards, the council says.

Universities might allow greater

autonomy but this would depend not only on the college's autonomy and quality of provision, but also on its internal monitoring and standards of teaching and research.

The CNA's paper points to its partnership in validation schemes as evidence of its preparedness to allow institutions greater freedom. The peer review system should not be seen as indicating lower status, its paper says. It gives strength and confidence to academic, educational and professional judgments.

But the council recognizes the time is right for some institutions to develop, and wants to find ways which will both command general confidence and preserve the council's accountability for the approval of courses and maintenance of academic standards. It might then ask for its charter to be amended to allow this.

The BTEC submission points out that it is concerned with national standards in qualifications dependent on acceptance of validation. BTEC experience of validation has not shown that so-called "mature" institutions are necessarily better at course validation submissions, standards of implementation, or consistency across courses and modules, the paper says.

Europe seeks ways to boost IT

The European Commission is laying plans for a programme to enhance education and training in information technology to complement the ESPRIT scheme for cooperative research.

ESPRIT, the European Strategic Programme for Research in Information Technology, was approved earlier this year, and is designed to strengthen the position of European industry in advanced computing and communications technology.

The community bureaucracy is now seeking advice on ways of boosting training in the new skills needed by the engineering industries to develop information technology, as well as the use of new technology on the wider

educational scene. Meetings of European education and social affairs ministers, and the heads of state meeting at Fontainebleau, have all endorsed preliminary proposals from the European Commission.

A series of meetings is now in hand to put forward ideas for the programme. One such meeting last week, organized by the University of Sheffield and the European Society for Engineering Education brought together academics, civil servants and industrialists to agree measures needed in Europe.

Proposals from this and other meetings will now be considered by the commission, in the hope that detailed plans and costing can be prepared

Computer centre strike request

University lecturers have been asked to back the London University computer centre during a one-day strike by members of the Association of University Teachers next Tuesday.

The centre will be picketed by AUT staff during the strike, which is being planned by the centre to appoint new staff on short term contracts. AUT members who normally work by telephone links with the centre, which is one of two in Britain, are being requested not to during the strike.

The strike decision was taken two weeks ago but a date was not announced because officials felt that negotiations might resolve the dispute.

Most trainees well taught, says HMI

by Patricia Santinelli

Most teaching on the Youth Training Scheme is good or adequate but the remainder is poor, according to Her Majesty's Inspectorate's first major report on the scheme published this week.

"In just over half the classes the teaching was regarded as good, in a further third it was adequate, but in the remainder poor," the inspectors say.

The report confirms some of the findings of other bodies and was compiled during the first year of the scheme. It involved visits to some 120 colleges, centres and voluntary organizations in over 40 local authorities, as well as discussions with more than 90 employers and managing agents.

The HMI says that effective work was characterized by a variety of learning activities which captured the students' interest and kept them involved.

But some teaching failed to provide opportunities for developing a variety of activities and interaction. Some students were lectured non-stop for 30 minutes, no related activities were provided and material and methods were not matched to the needs of the new clientele.

The report stresses however that the education service and its staff responded quickly to the demands of the YTS, despite difficulties in some areas of the country.

But it points out that in many instances college staff were failing to link the educational elements with the on-the-job training often because they

needed more information about work placements.

The report says that although colleges and other providers had established structures for liaising with managing agents, employers, the careers service and the Manpower Services Commission, coordination between colleges and managing agents varied considerably.

"Generally colleges found it difficult to achieve successful cooperation with a large number of managing agents. One college in the Midlands was providing off-the-job training for nearly 40 managing agents and had found it impossible to establish close links with all of them," the report says.

It says that schemes are best implemented under the control of one organization. There the training programme is usually more coherent, the objectives and the content are clear to all, and the monitoring and the review prove more successful.

The report indicates that in-service training lags behind. The HMI also found that the careers services were not always matching trainees to appropriate courses and that colleges were not necessarily placing trainees on appropriate courses, with some working for lower qualifications than they should or taking exams they had already passed.

It found that most YTS trainees in colleges were able to share the accommodation and equipment used by the other students. But sometimes training took place in depressing environments.

Engineering course praised

by Karen Gold

The engineering department at the Polytechnic of North London has achieved a high honours degree standard, and is "a well-knit body of conscientious and competent staff providing a caring experience for the students in their charge", a report by Her Majesty's Inspectorate says.

The report on PNL's science and engineering degree is complimentary about the quality of work, staff research and information provided for students. The engineering department makes no applicants after August 1 each year, thereby avoiding university "rejection" and only taking students who particularly want their polytechnic degree, the report says.

The science degree has students from a large variety of ethnic backgrounds, and some students coming in with few entry qualifications do very well. But there is also a high failure rate, and too little student involvement in lectures, the report says.

"Staff took the view that because of the large amount of subject material to be covered, and often the large class size, they must adopt the traditional lecturing approach."

Although facilities and staffing were praised in some areas, in others they were uncomfortable or outdated, as was some equipment. Student attendance at compulsory general courses was low: 70 out of 179 in one year and 38 out of 138 in another.

Chelmer Institute of Higher Education's new BEd course has been given a clean bill of health but is criticized for retaining a bias towards secondary schools, in the second HMI report on initial teacher training in individual institutions published today.

The HMI report is part of a national survey of teacher training which started initially in a small number of institutions but spread to encompass all colleges and polytechnics as well as some universities. Approval for publication of the reports was sought by the Inspectorate after a decision to set up a Council for the Accreditation of Teacher Education which is to rely heavily on HMI input.

The HMI says that it recognizes that the institute is considering modifying the course originally aimed at the 5-13 age range to 5-12, with two age band divisions of 5-9 and 7-12. This would more appropriately reflect current needs for primary teachers.

Nevertheless it points out that in certain areas the effect of original

planning has left a bias towards secondary schools which is inappropriate. This results in insufficient practice in primary schools and in a basic curriculum insufficient to meet the needs of the majority of infant schools.

"The limited provision of music and drama is notable and though geography is an important element in the science courses, there is insufficient history to sustain a primary teacher. On the whole the report compliments most aspects ranging from the staff and students to teaching styles and professional and education studies, but it expresses concern over the accommodation and environment. It says that self-help schemes on the Brentwood site where teacher training is located are barely keeping pace with the deterioration of the fabric, due to a local authority moratorium on maintenance and decoration."

HMI reports are available from the DES Publications Despatch Centre, Honeypot Lane, Stanmore, Middlesex HA7 1AZ.

Executive reinstated as inquiry continues

Leadership of the Labour students' organization has been passed back to its former national committee, which has been reconstituted until the Labour Party inquiry into its chaotic Easter conference is completed.

The conference in Hull, was abandoned after feuding between the competing democratic left and Militant supporters made continuation impossible in the view of national organizer Mr John Dennis, acting on the advice of party general secretary Mr Jim Mottershead.

The national committee meets for the first time since the row this weekend, with organization for the new academic year top of the agenda. Mr Mann, who remains chairperson, this week dissociated himself from the views of some of the NOLS leadership reported in *The Times* on June 29 that the intervention of Militant would damage the organization's ability to consolidate its position on the campuses in the new academic year. He said that at the time he was the only constitutionally elected officer of NOLS and had made no such comment.



Mrs Clare Cheney, of the Publishers Licensing Society, inspects the 96 boxes of illegal photocopies surrendered by Manchester University last week. The delivery followed an undertaking by the university to restrict photocopying of published works. It agreed to take out a licence after being threatened with legal action.

Partnership and investment urged

The partnership between British industry and education is in disarray and needs a research and development centre for vocational education to restore it, according to the Provost of City of London Polytechnic Mr Michael Edwards.

Effective education and training could only be achieved by a partnership between educational institutions, employers, central and local government, society and the individual, said Mr Edwards in his 1984 Sir John Cass commemoration lecture. In this country the partners were not

investing enough in the partnership. "It is certain that the deployment of investment (in higher education) is not based on any established and agreed set of policies and priorities, is uncoordinated, uncontrolled and wasteful," he said.

"The processed data for policy development and implementation is lacking and in desperate need of production, analysis and presentation. It is essential that this country should have, without delay, a centre for data processing and research and development in this field."

Updating handbook published

Practical guidance for educational institutions contemplating embarking on PICKUP, the professional, industrial and commercial updating programme sponsored by the Department of Education and Science, is offered in a new handbook on the scheme published this week.

The guide is the result of research into the development and success of existing PICKUP programmes. It offers information on such issues as establishing a programme, staffing and financial arrangements, promotion marketing activities.

The guide also points out that programmes need not consist solely of courses - seminars, in-house discussion groups and special lunches are all techniques which can be incorporated in the PICKUP response.

Information is provided on the design of programmes and the use of different tuition techniques, such as open learning.

Nine regional agents have been appointed to oversee the PICKUP scheme. In April, a programme of local collaborative projects was launched in conjunction with the Manpower Services Commission at a cost of £1.3m.

The Government also intends later this year to offer financial support to local education authorities in the education support grants for assisting the initial cost of development of programmes.

Medical scientists in cuts demo

by Jon Turney
Science Correspondent

Scientists employed by the Medical Research Council demonstrated outside the council's London headquarters yesterday to protest at budget cuts imposed by the Advisory Board for the Research Councils.

Although the demonstration, called by the MRC unions, was intended to draw public attention to the MRC's position rather than to mark opposition to council policy, staff are unhappy with several aspects of the response to the cash shortfall.

The unions feared that the council would try and keep some flexibility for backing new work by taking most of the money needed from research units instead of programme or project grants for university researchers. The staff side, representing nine MRC unions, has asked the council to protect long-term commitments - units, programme grants and training awards - at the expense of short-term project grants. This goes against stated council policy of protecting university work as far as possible.

The unions also want the council to protest publicly at the £2m annual cuts put forward by the ABRC to help cover redundancy and rebuilding costs incurred through restructuring in the Natural Environment and Agriculture and Food Research Councils. So far, the MRC's opposition to the cuts has been confined to the ABRC. A decision to campaign publicly, taken at the MRC's meeting in March this year, was deferred for a year at a later meeting.

In addition, the staff are concerned about lack of consultation by the council before strategic decisions were taken at this week's meeting.

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Overseas continued

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START ON PAGE 21

(18000)

Basic science 'endangered'

by Jon Turney
Science Correspondent

Increasing the industrial relevance of university research may endanger basic science. This warning was heard twice last week from leading figures on the academic and industrial sides of the research community.

Professor Mark Richmond, vice-chancellor of Manchester University, told the Cranfield Institute of Science and Technology conference on technology transfer that to shift academics' con-

cerns too far towards application of their research would reduce the flow of new ideas in future years.

Mr Derek Roberts, research director for GEC, backed this view the following day at a major conference on the future of British manufacturing industry in Cambridge. "I get very concerned when people in industry call for universities to have more industrial relevance. This is very dangerous," he said.

Mr Roberts argued that industrial research should concentrate on applying knowledge, while the universi-

ties worked to increase knowledge. He also voiced concern about calls for shifts in industry's requirements for new skills. "The last thing I want is universities to respond to our immediate vocational needs," he said.

It was ludicrous to talk of vocational education when people had a working life of 40 years and technology changed every five years, Mr Roberts added. Universities should concentrate on broad basic engineering education, with industry contributing specialist in-depth training in special skills.

Professor Richmond spelled out some other dangers of submitting to close industrial embrace. "Industry in this country has a reputation for tipping off universities," he said. Many universities had accepted lump-sum payments for the rights to new inventions. He argued that universities should insist on joint development of new ideas, preferably through a holding company such as Manchester has recently set up.

However, detailed management of intellectual property and exploitation should be out in the hands of business specialists, he argued. "Academics are the last people to put in charge of a business, let alone a developing business."

But Sir Henry Chilver, vice-chancellor of Cranfield Institute of Technology, wanted a closer academic involvement in industrial liaison. Perhaps whole universities could be science parks, following Cranfield's lead in hosting companies in the centre of the campus.

It was also important to devise new staff and students to work their interests outside the university gradually, he said. Saying the university should concentrate on academic matters and not get involved in technology was an arrogant dogma, he said.

Academics count the cost

Academics may like to score points, but don't often get the chance to turn them into cash. However, that is the latest idea Salford University has adopted to encourage lecturers to spend time on the fine detail of work with local industry.

The Salford scheme is modelled on a long standing arrangement set up by the industrial liaison team of the Massachusetts Institute of Technology in the United States. Professor Tom Allen, deputy director of MIT's liaison programme, told the MIT/Cranfield meeting last week that faculty members there scored points each time they chaired a seminar, gave a paper or made a visit which contributed to the institute's work with industry.

At the end of the year the points were totted up and a portion of the income from industrial work, now \$6m a year in total, was divided among the MIT departments according to their accumulation of points.

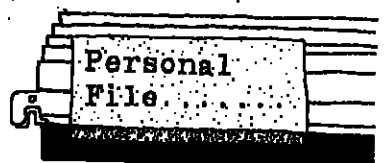
Professor Allen said the scheme was meant to be a modest incentive to foster industrial links.

The Salford scheme, run by the university's Independent Industrial Consultancy Unit Campus, is essentially the same. Starting in May this year, lecturers who volunteer to visit one of the 80 companies on Salford's books register points for each trip - 80 for a day, 50 for half a day.

The points will be converted into pounds, one for one to start with, which Mr Ron Platt of Campus puts at about half the normal academic consultancy rate. "We're not looking to put money into professors' pockets. This is an encouragement to do the job better," he said.

Salford plans to award points for other tasks in future and to vary their value to tailor the incentives to work it wishes to encourage. So far, the number of academic volunteers has run ahead of the visits needed and Campus now has to find work for all the lecturers claiming points.

The man who administers to the elite



M. Simon Nora, director of France's powerful *Ecole Nationale d'Administration*, came to Britain last week to receive an honorary degree from the University of Bath.

Trained as a lawyer in prewar France, M. Nora fought in the resistance and was among the first students enrolled in the newly founded ENA in 1946. Today he is its director, chosen by President Mitterrand to implement a far reaching reform of the school to open up access to this exclusive channel to the top of the French civil service.

Professor James Coventry, professor of French in Bath, writes: "On graduating from the ENA Simon Nora was assigned to the *Inspection des Finances*, one of those prestigious *grands corps* which constitute an elite within the French administrative elite. In 1951 he was appointed secretary general of the Commission on National Accounting and Planning in the Ministry of Finance. Then he served for a period in the cabinet, or private office of Edgar Faure, who was Minister of Finance from June 1953 to June 1954. When Pierre Mendès-France, that grand old man of French socialism, became prime minister he was detached from the Ministry of Finance to become a member of Mendès-France's private office.

One of the most important challenges of Nora's career came in 1969. President Pompidou appointed as his first Prime Minister Jacques Chaban-Delmas, who could be described as a left-wing Gaullist. Nora joined his private office along with Jacques Delors, now Minister of Finance in President Mitterrand's government.

Nora and Delors drew up a programme of social and economic reforms

Nora: author of influential reports to form the basis of the *nouvelle société* of Chaban-Delmas, which was an attempt to build a new kind of society in France, to unblock France's *société bloquée*, but President Pompidou was unwilling to go through with many of the fundamental reforms proposed in the programme.

With the arrival of the Socialist government to power in France in 1981 it seemed likely that some reform of the selection procedure would be introduced at the *Ecole Nationale d'Administration*. It had been frequently alleged that the school was recruiting its students from a narrow social and educational base, and that it was an institution for training middle-class technocrats who might frustrate the changes a Socialist government would wish to bring about in France.

A few months after coming to power the new French government decided to widen access to the ENA by introducing a separate competitive examination for entry to the school open only to elected officers of trade unions and local government councils. Simon Nora was the man chosen by President Mitterrand to implement this controversial reform.

In addition to his work as an administrator Nora has acquired a considerable reputation as the author of influential reports commissioned by successive French governments on the developing countries, on the nationalized industries, on the restoration of historic buildings in France and, more recently, on the impact of information technology on society. This latter report, *L'Informatisation de la société*, has been issued as a successful paperback by a leading French publisher.

Civil servant joins quango hunt

The secretary of the Scottish Education Department, Mr Angus Mitchell, is to take up an honorary fellowship in Edinburgh University's politics department when he retires from the SED next month.

Sheffield shuffles its colleges

by Patricia Santinelli

Plans for a major reorganization of tertiary provision were expected to be approved by Sheffield's education committee this week.

The plans are said to be the first since reorganization of tertiary education proposed by a local education authority propose the setting up of eight tertiary colleges. They are partly based on existing further education institutions and school premises.

The plans, which are to be circulated for consultation, include the setting up of a working party to oversee the reorganization.

The proposals follow Sheffield City Council's agreement in principle two years ago to reorganize its secondary comprehensive schools, colleges of further education and adult education divisions into tertiary colleges and 11/12-16 secondary schools. There would be 26 of these, eight schools would close and 11 school buildings would be released for other use.

The tertiary colleges were decided upon in a move to establish comprehensive, open and accessible provision and facilitators of educational opportunity related to the needs and aspirations of individuals, local communities and the city.

Eight colleges would ensure breadth of opportunity, viability of teaching group sizes, provision which seemed to be of excellence at all levels as well as institutions of sufficient size to respond flexibly to future changing patterns in demand, says the report. The model set in each part of the city. The chief education officer says this intended to strike a balance between positive action to stimulate participation and locations designed to meet locally expressed demand.

Each college would have a minimum of 800 and a maximum of 1,500 full-time equivalent students and a staff of 110.

The colleges would cater for a range of students from those aiming for higher education, seeking vocational education, general education, pre-employment courses, day release courses, the unemployed, to adults wishing to enhance their basic education, qualifications, skills or retrain as well as students interested in non-vocational opportunities.

OU reveals strategy plan

by Maggie Richards

Plans to establish the Open University on a route to the 1990s have been approved by its senate. They include development of a financially sound continuing education programme; a shift away from direct broadcasting to video production; and a greater emphasis on science and technology.

The plans, put forward by the university's long term review group, also envisage commitment to a minimum undergraduate population of 60,000 to maintain the open access principle and to be fully cost-effective.

The group says its proposals are an amalgam of measures desirable on academic grounds and some largely dictated by financial considerations, which could be altered should the situation improve. The proposals will now go forward to the OU council for final sanction next week.

The review was commissioned last year to consider the OU's role in an educational climate much changed from the late 1960s, when the university was set up before the OU received notification from the Department of Education and Science of savage cuts in its grant for the next two years.

As an economy measure, the review

group has proposed the university should encourage its undergraduates to become more independent in their learning as they progress to higher levels, enabling scarce resources for tutoring and counselling to be concentrated at foundation level. It would also like to see a change in the current policy of offering every course each year. Less frequent presentation would allow the university to maintain its existing broad spectrum of courses.

To keep abreast of development, the group has recommended a financial reserve which would allow the OU to respond quickly to market demands for new courses. It also wants to see close integration of the undergraduate curriculum with the continuing education programme, to produce dual use of course material and academic expertise.

Senate has adopted the review proposal that continuing education should be as equally important to the university's future as the undergraduate programme.

The review group has maintained that the present self-financing principle of continuing education should be relaxed, and urged that the DES should be persuaded to fund continuing education on a similar basis to

extramural provision in other universities.

Courses in vocational and professional areas will need to be expanded as part of the growth of the continuing education sector, along with programmes in community education.

In broadcasting, senate has agreed the OU should seek to maintain its partnership with the BBC, but the university should reduce overall levels of broadcasting in favour of a switch to the use of video cassettes.

In arguing for reductions in spending on broadcasting, the review group's report says the £10m per year cost to the OU is too high. At present the university is compelled to purchase broadcast material of extremely high quality, when cheaper versions would suffice.

The university intends to incline students towards mathematics, science and technology, in line with national trends, and provided it can obtain the necessary funding.

Long term, the university aims to strengthen its regional bases. For the present, it will maintain the 13 existing centres, though it intends cutting down on the high cost of leasing arrangements for offices. It also hopes to conduct experiments in reorganizing the regional operation.

Sir Keith spells out interventionist policy

by Patricia Santinelli

New central Government intervention in the management of further education colleges was spelled out this week by the Secretary of State for Education who said that the *laissez faire* attitude of the 1960s and 1970s was dead.

Sir Keith Joseph, speaking at the Education and Training and Development Exhibition and Conference in Birmingham on vocational education for the 1980s said it was now time to change the balance between the responsibilities of the various partners in the management system.

"Until recently the prevailing attitude of the centre was that this sector of the education system could be left in the safe hands of the institutions concerned. But now there is a need for strategic decisions to help colleges prepare for future changes in demand," he said.

Added to this the need for continuing restraint on public expenditure called for national agreement about priorities and the scope for economies and for improving the coordination in the provision of minority subjects.

Sir Keith also wanted local education authorities to pay closer attention to the management of further education by taking a hand in identifying and redeploying surplus capacity, and by purposeful negotiations on reforming

the national agreement on conditions of service.

Referring to the transfer of funds to the Manpower Services Commission as outlined in the White Paper *Training for Jobs*, Sir Keith said that one of the major tests of the new arrangements would be whether it provided scope for making economies.

He added that I.E.A.s and colleges could make a useful start by adopting better systems of management information which revealed what resources were being used and for what purposes.

Although he regretted the failure to reach agreement with the local authority associations on the new arrangements, Sir Keith said the Government was determined to implement them.

● Sir Keith is hoping to persuade Oxford and Cambridge to take candidates with vocational qualifications in place of A levels. Discussions are taking place between his officials and the two universities, writes Mark Jackson of *The Times Educational Supplement*.

Mr David Young, chairman of the MSC suggested that the only hope was to get Oxford to give a lead by accepting both BTEC and City Guilds qualifications. "I told him that we should concentrate on convincing them and that if we did that the rest would follow," he explained to the conference.

'Extra sensory' computers predicted at conference

Since computers have been created with imagination and the ability to think, it is only a matter of time before they are capable of extra sensory perception. That time is not far off.

This startling prediction was made by Mr Bill Armitage of the Industrial Society at a conference of educationalists and careers advisors in London on Monday. He said intimations of this development were inherent in the new science of bioelectronics, the study of electrical discharges in patent behaviour. "By the 21st century we will be able to read a man's mind through a keyboard. We will think at it."

Warning that talk of the electronic revolution as though it was over was premature, he said: "The computer revolution has scarcely begun. Computers will be able to do more and more complex things and take on more human qualities. They will be adapted and re-programmed themselves and remember like the human brain; and that is the tip of the iceberg. It will take over more and more routine work."

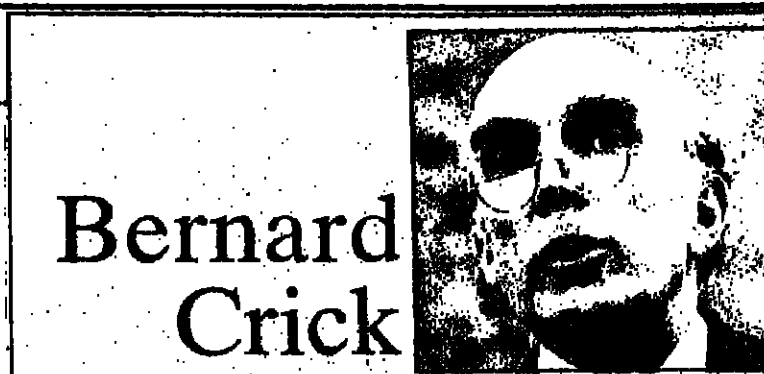
So there will not be a great deal of going around with a great deal of knowledge in your head. People in

professions whose expertise lies in the information they hold will have less and less to do. Most teaching will be done electronically."

Suggesting that it was unreal to ask how far we wanted to get into such technology, Mr Armitage said: "The people who are doing this are not thinking of the social implications." There was no option about participation, he said, for Britain had not resources to do otherwise.

In 10 to 15 years, he predicted, anybody without computer skills would be out of a job. The lesson for educationalists was to take the fear out of it all, to ensure that all young people were computer literate. "It will be a matter of attitude as much as knowledge. The skills required will be very mixed but the vital test of the ability to handle computers lies in English language and logic," he said.

Mr Kenneth Hart, of the North East London Polytechnic and chairman of the polytechnic committee on sand-wich courses, said young people seeking higher education courses needed much more information to help them make sensible choices. The information is, he said, often inadequate.



The Good Food Guide to external examining

This is an original column. Watch me carefully to see that I don't slip in an old one in August when no one is reading. Thanks for the backscratcher Laurie, I'll miss you. You leave me feeling lonely and exposed. Everyone else is so serious, when the situation has become so ludicrous (the privatisers interfering everywhere) that satire seems only adequate response. I know you are not leaving the column because you are now living off crime, but that having mocked the first round of "fundamental investigations" and "basic reviews" you couldn't face the second. What did the German doctor remark? Everything in history happens twice, once as Marx and once as Hayek.

So let us turn to something mundane that the v-cs have pronounced on in a pathetic bid to stop the Withliffers. General from getting the Quick Look (or short, sharp shock) committee on assessment in the polys from moving on to the universities (actually, I think "onto" as one word would carry the meaning better).

Time and time again I've seen confusion and injustice arise from joint boards in dual or combined honours with different criteria and standards applied. At a joint board recently one lot spoke in figures and the other in Greek. One lot also said that in marginal cases, even, it was improper not to consult a student's record of course essays (which they plainly didn't have), and then plunged into the most prejudicial and undocumented gossip.

Hands up all of you who have read it! Would the HMI's mind leaving your rooms for the moment? And all the voluntary watchers and informers too (including the "professional" (sic) economists) who wrote to Sir K**** about that course at the OU. I repeat. Hands up all of you who have read it! That's a poor show. You've all seen one this year, unless you have been ill or slacking, and many of you have been one. What's that? It hasn't been circulated. That is no excuse. It was mentioned in your senate papers in the v-cs report and in *The THES*. You could have sent for a copy to the Committee of Vice Chancellors and Principals, 29 Tavistock Square, London WC1., s.a.e 14p (it is a very thin three page document). What am I talking about?

The "code of practice" on external examining of the Committee of Vice Chancellors and Principals, is a well meaning, sensible and evasive homily. It tells us what a good practice is. Now "good practice" is a good weasel word. It wriggles around any need to report on what is actual practice. "(17). Departments should use the opportunity afforded by the visits of external examiners to discuss with them the structure of the course and the curriculum . . . To some this is a banality, to others an affront to internal integrity, something of other, integrity, independence, inertia.

The code steers clear of suggesting common assessment schemes. Internal appeals procedures where two departments get locked (each voting solid and predictable) or recommending double-marking. They do say that the selection of any sample must be agreed with the external. Again this is not to be taken for granted. Not so long ago when I asked to see some more scripts of a student on whom there were divided opinions, the head of department told me that that was his concern; and when I insisted, took me out in the corridor and shouted that he would not be crossed in front of his junior colleagues (i.e. the other examiners). So no wonder the v-cs say that "only persons of sufficient seniority and experience . . . able to command authority should be appointed, normally but not exclusively at professional level". For once I agree. And if the v-cs wisely advise limited terms, after that experience I would have welcomed a word about minimum terms. Yet it is difficult to get people of standing to perform this boring job. I do it for secular penance. As I mark each script, I pray for the forgiveness of all of us that it has to come to this.

The code is unrealistic for it says nothing about the decline of the only institution that ever guaranteed getting good external: good food at an examiners' dinner and a good hotel. But the v-cs bluntly state that the committee was set up "in the context of a letter from the Secretary of State to the chairman of the UGC". Yet they are saying that we do not need a uniform system and that we can and should put our own house in order. They must be strong enough, however, to stand up for us all against the state's external intrusion into basic corporate freedoms. Won't anyone say to him and his advisers, "what if the other lot get in and act like this?" That is what

The code has to be decoded. "(15) The views of an external examiner must be particularly influential in the case of disagreement . . . The signature of external examiner must be appended to the final list of degree results as evidence that he accepts the classification". That's a bromide, but I remember telling so-and-so that if he was outvoted as an external in the University of Wessex and told that each examiner's vote counted equally, he should not merely resign but resign nobly. Write to *The Times*. The *THES* the AUT or finally - ah but we didn't have Sir K**** then.

"(16). External examiners should be encouraged to make annual reports and should always provide a written report at the end of their period in office. They should be free to make any comments they wish, including observations on teaching, course structure and course content. Reports at the conclusion of a period of office might be copied to an incoming external examiner."

Reports should be sent to the vice chancellor, whose responsibility it is to see that they are considered and action taken by the senate or other appropriate body. Well, I suppose we could always circulate a black-list of externals who did make such reports. I did it once unasked, and the v-c concerned simply "received it gratefully" and sat on it, or ate it. Here CNA practice is far better. The vice chancellors are to be supported. It is crazy and arrogant, as is the general practice, to adjudicating on marks.

So let us turn to something mundane that the v-cs have pronounced on in a pathetic bid to stop the Withliffers. General from getting the Quick Look (or short, sharp shock) committee on assessment in the polys from moving on to the universities (actually, I think "onto" as one word would carry the meaning better).

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Bristol Polytechnic fashion student Georgina Heath models the evening dress which won her colleague Debra Parkinson £150 from the sponsors of their degree course show. The prize includes an option for the dress to be used to promote Dubonnet.

Sweepstake for research

A St Andrews University academic is to launch an American style sweepstake to raise funds for cancer research.

Dr Colin Thomson, senior lecturer in theoretical chemistry and director of one of the National Foundation for Cancer Research laboratories, is running the national campaign for the Association for International Cancer Research.

It will involve a free draw with prizes ranging from a new car to a Bermuda cruise on the QE2. Participants will be invited to contribute to cancer research. Dr Thomson said he had not set a target sum, but added he hoped it would be substantial.

He stressed he was not in any way trying to compete with other cancer charities. The AICR already funded 15 research projects in the UK, he said, but money was still badly needed for certain areas which had never received sufficient funding.

Dr Thomson hopes to support work on cervical cancer, new treatment for malignant melanoma, one of the most virulent forms of cancer, and a project on the electrical properties of normal and cancerous cells.

The St Andrews NFRC laboratory, housed in the university's chemistry department, has just received £45,000 from the National Foundation for Research Costs over the next year.

The laboratory will also use a new NFRC 'handed' computer system to design possible anti-cancer drugs.

overseas news

Germany 'losing talent'

from Barbara von Ow

MUNICH West German universities are threatened by mediocrity and depression as a result of the dramatic job shortage for young scientists, a leading academic has warned. Eugen Seibold, president of the *Deutsche Forschungsgemeinschaft* (DFG), which channels government grants into selected research projects, said that, due to the lack of academic jobs, universities were losing precious young talent and would be left with second-rate scientists in the next decade.

German research was in danger of becoming provincial, Seibold told the annual DFG conference. "Everyone talking of top-level research and elite education in their Sunday speeches must be aware of this," he said, in a reference to the heated public debate on foreign minister Hans Dietrich Genscher's call for private elite universities as a way of ensuring West Germany's scientific competitiveness.

Due to the mounting number of students, universities were forced to concentrate their funds on education at the expense of research, Seibold noted. As a result many young German scientists depended on the help of third means, namely from the DFG, for their research.

However, as the number of applications for DFG grants was increasing, fewer grants were being awarded. Only 4,391 open grants, available to all scientists, irrespective of subject quotas, were handed out in 1983, compared with 4,749 the previous year.

Equally, the number of grants channelled into interdisciplinary, nationally coordinated research programmes had shrunk. It was evident that not all 25 projects submitted for 1985 could be promoted, Seibold said, adding that the risk of qualified applications being turned down because of financial problems was increasing.

Lack of funds and equipment, notably in the so-called "special research areas", although probably not noticeable at present, would have a cumulative damaging effect in the long-term, which would be increasingly difficult to overcome, Seibold warned.

Addressing the conference, education minister Dorothee Wilms said she shared the concern about the long-term effects of academic unemployment. However, she pointed to a planned government scheme to promote post-doctoral scientists, for which the DFG would receive DM 5m in 1985, and DM 15m annually thereafter.

Students lose draft case

A controversial law which entitles the federal government to withhold grants and loans from students who have not registered for military conscription was upheld by the Supreme Court last week with a six to two majority. The ruling overturned a lower court decision which found the law to be unconstitutional because it is self-incriminating.

Although there is no compulsory military service in the United States, legislation introduced by the Carter administration requires men to "register" for the draft within a week of their eighteenth birthday. In 1982 Congress added the controversial amendment specifying that federal financial aid should be withheld from the small minority of men who had not registered.

The chief sponsor of the 1982 amendment, New York Republican Gerald Solomon, said the court's ruling indicated "the draft that federal aid to students was a privilege, not a right."

Campaign launched to buy 'great Danes'

from Donald Fields

COPENHAGEN Committed to restoring equilibrium to a vulnerable economy, Denmark's Conservative-led coalition government has launched a controversial programme that will see the appointment of 25 well-funded "super-researchers" for five-year periods. The scheme is strongly associated with the Liberal minister of education, Mr Bertel Haarder.

The 10 research professors named so far - out of 180 applicants - are all drawn from specialist fields of science, prompting considerable resentment among those moulded in Denmark's strong humanistic tradition. Coupled with other measures for basic research proposed by the Danish Research Administration the blueprint represents a 500m-kroner (£36m) shot in the arm for research.

Dr Flemming Woldbye, director of the administration, said one of the explicit purposes of the scheme was to lure home Danish brains that had been drained abroad, and to forestall a future exodus of talents. He hoped that recognized top people bolstered by generous research scholarships would be able to create environments conducive to the cross-fertilization of ideas.

The ability of the genius Niels Bohr to attract a pool of eminent scientists to Copenhagen in the 1930s still exercises the Danish imagination. "The 'super-researchers' will work under the aegis of the universities, entailing a modification in the legislation on higher education. They will draw a professor's standard salary, plus 'appropriate supplement', reporting annually to relevant research council on their progress and budgeting."

The select band of 25 is unlikely to provide much direct spin-off in terms of jobs for assistants, but the government has decided to recruit separately 1,100 lower-level researchers into the universities during the next decade. This represents a doubling of the present rate, and will partly relieve the blockage caused by the fact that Danish universities employ a disproportionate number of staff aged around 40 who studied during the golden age of expansion but will not make way for younger talents before retirement. "If applied judiciously, this plan will solve some of our problems," Dr Woldbye said.

US ruling new blow to staff unions

from Peter David

WASHINGTON In another severe blow to university trade unions in the United States, the government's National Labour Relations Board ruled last week that academic staff at the University of Boston exercised "managerial" responsibility and were therefore not entitled to bargain collectively with their employers.

The decision, which came after three years of legal hearings and pitted the American Association of University Professors against Boston's controversial president, Dr John Silber, has dashed any remaining hopes that trade unionism can remain a potent force within private universities and colleges.

Since February 1980 the number of private colleges with collective bargaining agreements has slumped to under 60. Boston was the only major private university in the United States to retain a unionized academic staff. The abrupt reversal of union fortunes began in 1980 when the Supreme Court ruled that because academic staff at Yeshiva University, a small private college in New York, exercised so much authority over academic matters and institutional policies they were effectively managers with no right to insist on collective bargaining.

Although it does not apply to public-funded universities, the Yeshiva decision has prompted the presidents of private institutions throughout the United States to abrogate collective bargaining agreements with their lecturers. In every appeal so far, the National Labour Relations Board has endorsed their decision.



Andersen and Bohr - still gripping the Danish imagination

Spectacular! Conception, the "super-researcher" scheme bears some of the hallmarks of West German thinking. But it was devised without reference to others' practices and appears to have been untried in a small country. Denmark is conscious that in the last year for which comparisons are available - 1981 - it lagged behind all other Nordic countries except Iceland by spending only 1.06 per cent of its gross domestic product on research and experimental development.

For the 25,333 Danes so engaged the consolation was that their research work was more productive and more frequently cited than that elsewhere in the region.

Though the breakdown of Danish researchers is fairly typical by international standards (almost half in the business sector, more than a quarter in higher education, less than a quarter in government), the tradition is to spread out research support, with a primary role played by private institutions such as the Carlsberg Foundation and public research councils.

The trust is currently towards basic rather than applied research, but government policy is more and more geared to the demands of industry for scientific inquiry in fields where there has been a shortage of researchers. Among the first 10 "super-researchers" four are involved in disciplines denoted by the prefix "bio". Metallurgy and constructional engineering, veterinary science and geology, elec-

tronic communication and data linguistics are also covered. More than the others, the last project listed - undertaken by the only woman involved - testifies to the requirements of a small country dealing with linguistically overbearing partners in a common market. Benefiting from the stimulus provided by the scheme was a Danish researcher, Bente Møller, at Copenhagen University lecturer, engaged in an EEC project to develop an automatic translation system that will process all the community's languages and a study called Danword that will analyze the frequency of Danish words and be applied industrially and pedagogically.

Denmark's swing to technology, so reflected in student enrolments, is welcomed by business and right-wing interests who regard it as the springboard for a much-needed boost in exports. Placing its emphasis on environmental protection, the woman's position, and peace and conflict, the politician left believes the worth of the new technologies still needs to be tested.

Polemics in the Copenhagen press show that the grounds for criticism are not solely political. One article accused Mr Haarder of being naive in equating "super-brains" with technicians and rhetorically asked: "I have not Hans Christian Andersen, Søren Kierkegaard and N. F. S. Grundtvig done something for the country - not just for the exchequer, but also for our

esteem? How quickly will a V. S. Sørensen (a modern writer) obtain a merited super professorship?" In reply, one academic insisted that it was absurd to treat productive activity and humanistic, artistic culture as being mutually opposed. Earlier, Mr Haarder had himself gone into print to argue that in aggregate the government was not depriving higher education and research of money, despite its savings strategy.

Some critics argued that the new research scheme was too little, too late, and that 25 glamorous publicized research professors were window-dressing that disguised the fact that 200 university chairs stood vacant as a parsimonious government realized that five associates cost no more than four fully fledged professors.

There were charges of elitism and secrecy in implementing the super-professor scheme. With government funds for Copenhagen University trimmed by 1.1 per cent for 1985 - despite an increased intake of students - accusations of fiscal juggling abounded.

However, the ministry of education justified itself by insisting that every person granted a research professorship was of proven top quality and capable of inspiring others. The scheme was not skimming money from existing research funds, and savings made elsewhere - including those of ministry of industry-sponsored support schemes - were part of the constant reassessment of possibilities.

As Mogens Dahl, of the Danish Research Administration, put it: "We are seeking an overall adjustment of higher education to what now appear to be areas of expansion. It's essential that we educate students so they can find a job."

There's a contraction in opportunities for teachers, but this does not necessarily mean the humanities will be neglected - after all information technology is a part of human activity. The persuasive Dr Woldbye says that during recent critical years experts have tended to become fixated on short-term problems and neglect the long-term ones. The sweep of his thinking may point the way ahead.

"There are more researchers alive at the present time than ever before," he stresses. "We know that biotechnology is going to be important - but what about the things we don't know?"

Professors face sentence

from Bernard Kennedy

ANKARA A number of leading Turkish academics are facing court action over their participation in a campaign for the broadening of human and civil rights.

They face up to a year's imprisonment for their part in organizing a petition described by the Ankara martial law prosecutor as an unlicensed publication. Of the 56 individuals so indicted, nine are professors and six senior lecturers.

Many other academics who also signed the petition are now wondering what action may be taken against them - if not by the martial law prosecutor then by the predominantly right-wing university authorities.

Of those facing trial several have already suffered for their beliefs. Yalçın Kırık, a lecturer, has been in and out of detention on charges of praising communism in his book *Towards a New Republic*. Others were removed from their university posts without being given a formal justification during the martial-law purge of 1982/83.

The petition which led to the latest actions was signed by nearly 1,400 well-known Turks from all areas of public life except politics. It claimed that in spite of last year's general elections and the inauguration of a civilian government, there was still some way to go before one could talk of full democracy in Turkey while freedom of speech and organization remained very restricted. Emergency judicial procedures were still being used while torture had become a customary primitive form of punishment without trial.

With regard to the universities the petition claimed that they had been deprived of all independence and it proposed that appointments should once again be made by election. It described the Higher Education Council set up by the military in 1982 as a body with exaggerated powers.

The HEK hit back at these criticisms at a recent meeting in Sivri, a city 330 kilometres east of Ankara, it adopted a stand which pointed out that appointments were not made by election in many democratic countries and it indirectly accused the writers of the petition of wanting to recreate an atmosphere of conflict in the universities.

Asked whether any disciplinary action would be taken against university teachers who had signed the petition, the HEK's president, İhsan Doğramacı, said no. However this has not prevented the opening of internal inquiries at Ankara's Hacettepe University and elsewhere and it is being mooted that many academics did not sign the petition precisely because they feared this.

Private universities and colleges, which have traditionally educated about a fifth of America's students, are being offered \$1m by a group of major foundations and business corporations to help them cope with the prospect of declining enrolments.

The money will be provided in the form of "action grants" to encourage financially-poorer institutions to seek ways to adapt to a smaller pool of students and sharpened competition from publicly-funded universities.

Explaining the purpose of the grants, Mr Alan Pfifer, former president of the Carnegie Corporation, said private higher education was a precious national resource that had experienced a decade of underfinancing. He added: "The outlook is becoming grimmer. The pool of youth entering college age will shrink through the 1990s. Government aid to students is unlikely to increase and students will be further jeopardized by private colleges heavily dependent upon tuition fees for their income."

The Carnegie Corporation is a principal contributor to the newly formed Consortium for the Advancement of Private Higher Education, established last year to protect private colleges from the prospective financial and demographic downturn.

Other contributors include the American Telephone and Telegraph Company, the Ford Foundation, the Prudential Insurance Company and the Standard Oil Company of Ohio. Collectively, they have given more than \$4 billion to the consortium with an eventual target of \$18m.

overseas news

Report allays research fears

from Peter David

WASHINGTON A robust defence of the multi-million dollar research deals signed over recent years between American universities and large business corporations was delivered last week by a national committee of university administrators, research scientists and business executives.

In a report published by the Twentieth Century Fund, the group says fears that burgeoning ties with industry will erode traditional academic values have been grossly exaggerated. Although the growing stake in university research has given rise to charges that the independence of the universities would be jeopardized, it claims, "corporations have no desire to tamper with or curtail the freedom that is critical to intellectual inquiry."

The reassuring conclusions of the committee, chaired by Mr Robert Sproull, president of the University of Rochester, contrasts starkly with anxieties voiced over the past two years in congressional hearings and on many campuses. Concern has focused on the danger that excessive business sponsorship might alter the direction of scientific research and inhibit the publication of potentially marketable findings.

In practice, the committee argues, business corporations have proved eager to comply with university guidelines designed to safeguard academic traditions. And it says universities have much to gain from fostering even stronger links with the business community, to shore up their finances and "reduce the risk that the university will become isolated or out of touch with the needs of the world into which it is sending its students."

Private industry provides only 4 per cent of the money spent on basic research at American colleges and universities, while the federal govern-

Report allays research fears

from Peter David

ment provides 67 per cent. But the private sector's share has become controversial because of the large sums involved in a number of agreements between university scientists and firms interested in exploiting new discoveries in biotechnology.

In 1980, for example, Hoechst, the West German chemical corporation, agreed to spend over \$60m for 10 years to finance a new department of molecular biology at the Massachusetts General Hospital, which is affiliated to Harvard. In return, the company acquired exclusive rights to market any patented inventions that might emerge from the work it funded.

Other companies have followed suit. In 1982, the Monsanto Chemical Company, which already had a similar bargain with Harvard, said it would give Washington University in St Louis \$23m over five years for biomedical research. The university owns any patents resulting from the work, but Monsanto has the right to exclusive licences and a 30-day priority review of scientific manuscripts written by the academic staff.

The Twentieth Century Fund report concedes that the prospect of big profits from research in biotechnology calls for "some adjustment" in the way universities have managed their partnerships with industry, but it does not believe radical changes are called for. Instead, it formulates a number of principles which, it says, are flexible and resilient enough to protect the independence of the academic community.

A principal recommendation is that every member of the university academic staff should be required to make a "firm commitment" to give priority to the university and to teaching. Although many universities already impose a limit on outside activities, such as a maximum one day a week for consulting, the report says

decisions should be based on the quality of a lecturer's campus performance, not on rigid time-limits. To prevent conflicts of interests, the report adds, academic staff should be required to disclose their relevant commercial connections, such as regular consultancy arrangements or external sponsorship, to departmental chairmen or other designated officials. They should make similar disclosures to students working under their supervision, so students can be free to pursue their own ideas rather than being pushed into lines of research simply to further their supervisors' work.

Another recommendation suggests that firms investing in particular kinds of research might be asked to pay an "intellectual overhead" to the university, so a share of the money can go to disciplines where industrial sponsorship is scarce. Otherwise, the report says, the spirit of collegiality could be undermined by a belief that particular scientists or departments are receiving preferential treatment.

Fear about precisely such jealousies persuaded Harvard several years ago to drop a plan to buy a share in a company that would have been organized by a group of lecturers to exploit their expertise in biotechnology. The report applauds Harvard's decision and says the dangers in a university buying equity in a company operated by or for some of its academic staff "are so great that such actions must be prohibited."

Universities should also avoid conflicts of interest by denying exclusive licences to firms in which their own staff hold a substantial share. The committee believes it "ill-advised" for a company to dominate a whole field of research within a university. "University-industry relations are likely to work best when they involve only a few faculty members," it says.

The United States Supreme Court has finally ended a three-year legal odyssey by ruling that universities should be allowed to compete freely when they negotiate lucrative television contracts for their football teams. Peter David writes.

In a decision expected to have a major impact on university finances, the court said the National Collegiate Athletics Association, which has until now forced colleges to ration out their television appearances and the money they generate, had operated as "a classic cartel" in violation of American anti-trust laws.

Before the decision, higher education institutions had expected to earn more than \$70m this year by selling football broadcast rights. Although sharpened competition may now push that sum even higher, most of the rewards will in future be reaped by the "major football powers" - colleges with teams that command an enthusiastic national audience.

The ruling effectively ends the tight control the NCAA has exercised over college football for more than three decades and voids the current multi-

award for public service - not a charge-sheet for subversive activities. During recent months, the authorities have tried, therefore, to persuade them to go abroad - ostensibly for a few months - so that the proceedings against them could be quietly dropped. When these offers were vehemently rejected, the authorities then tried to involve the Church and even the United Nations in an attempt to get the academics out of the country. However, seven Solidarity leaders who faced similar charges, have all declared that the authorities must either bring the accused to trial or else discharge them unconditionally.

Another KOR member, Dr Jan Jozef Lipski, who was arrested early in 1983, has been allowed out of prison to receive treatment in London for a serious cardiac condition. A petition on his behalf had been organized among British American and West European scholars, and the Polish authorities clearly welcomed the opportunity to appear magnanimous.

On hearing of the charges against his KOR colleagues, however, Lipski returned to Poland, insisting that they were to stand trial, he should be with them. He was arrested the day after his return, but was later released on health grounds (and again on health grounds) does not figure in the present indictment.

The four due for trial today cover a range of academic disciplines: sociology, history, mathematics and physics. Their activities as KOR activists are described as "social self-defence", including underground publishing, participation in the "flying university" of the pre-Solidarity period, and the defence of victims of breaches of human or civil rights. Romanaszewski, for example, was co-author of a report to the Madrid Helsinki Review conference on the situation of human and civil rights in Poland.

The close connection between intellectual human rights activists and Solidarity pre-dates the signing of the Gdansk Accord, going back to mid-August 1980, when a group of 76 Warsaw scholars signed a letter of support to the striking workers of the Baltic port.

West German expansion

from Barbara von Ow

MUNICH West German universities will be expanded to a total of 805,000 places until the end of this decade, from 760,000 at present, a joint planning committee of the Bonn and Länder Governments has concluded. The new "framework plan" for university construction passed by the committee runs until 1992.

The new "framework plan" lays special emphasis on: ● Priority of research, especially the development and promotion of new research areas such as micro and optoelectronics, genetic engineering and information technology; ● Improvement of the universities' infrastructure by better electronic equipment, and the renovation of older university hospitals; ● Consolidation of new universities: 145 projects, costing a total of DM 1.6 billion, will involve the expansion of universities founded after 1960; ● Expansion of polytechnic universities, which make up 14 per cent of the framework plan.

Neither level of government, however finds the current arrangements for the sharing of the funding responsibility entirely satisfactory. In fact, each level has learned to use these arrangements to shift the blame for funding cuts and for the lack of higher education policy on the other.

Widespread cynicism as a result of this self-serving battle has lowered the morale of both students and faculty. A decade of underfunding has left most Canadian universities in a state of crisis.

It is clear that a new arrangement is needed: one that spells out the appropriate distribution of the financial burden between the two levels of government, and intergovernmental administrative arrangements. Without such new arrangements, the plight of the post-secondary educational system in Canada will continue to worsen.

The author is associate executive secretary of the Canadian Association of University Teachers.

Ron Levesque



Time to consider a new deal

The Canadian Association of University Teachers has recently called upon the Canadian federal government to pass legislation to establish new financial arrangements for post-secondary education between the provinces and the federal government.

The CAUT at its May council has proposed a new deal for post-secondary education. The new policy drafted in the form of a "bill", the post-secondary education financing act, provides for:

● a declaration that the bill does not alter or encroach upon the provinces' constitutional responsibility for education;

● a set of national post-secondary objectives including protection for accessibility, academic freedom, and research;

● a clear statement of the financial responsibility of (the federal) Parliament for the support of post-secondary education including a schedule of incentives for provinces not only to maintain but to increase their level of funding for post-secondary education: first by continuing the basic federal transfer as established in 1977; second by establishing supplementary contributions to provinces which meet national post-secondary educational objectives, maintain their relative share of the funding of the system, and third, by a further cash contribution to provinces which improve on their relative share of funding post-secondary education;

● extensive information, political debate, and visibility for post-secondary education through:

a) the establishment of a national post-secondary education advisory council;

b) the requirement of an annual report to parliament by a high-profile federal minister and

c) of an annual review by a standing house committee empowered not only to investigate but also to propose the disbursement of supplementary cash grants to the provinces.

This proposal no doubt sounds complicated (but hopefully not irrational) to non-Canadians; however, the question of how Canadian universities should be funded has a long and tortuous history. Although the provinces have the constitutional responsibility for education, since the 1950s the federal government has shared the responsibility for funding universities.

Neither level of government, however finds the current arrangements for the sharing of the funding responsibility entirely satisfactory. In fact, each level has learned to use these arrangements to shift the blame for funding cuts and for the lack of higher education policy on the other.

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Ron Levesque

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Recognizing the passport's limits

In spite of criticisms which emerged fairly early on our current system of 16 to 18 plus exams in England and Wales has dominated the future for most school-leavers for some 30 years.

A and O levels, and to a far lesser extent CSE, have become the unchallengeable passport to higher and further education, the professions and employment. This is regardless of the fact that it is now recognised in many quarters that they can be an inadequate performance indicator.

In 1981/82 the majority of school-leavers had sat one or other of these exams, with only 72,000 out of 750,000 of English school-leavers - this figure includes those from further education colleges - not sitting a GCE or CSE exam. Out of that number a proportion sat other types of exam such as those of the Business and Technician Education Council.

Altogether 19 per cent of school-leavers took A levels, 60 per cent O levels and 76 per cent CSEs. Between 1973 and 1981, the proportion of school-leavers who left without a GCE or CSE qualification has dropped from one in five to one in ten.

Ironically, considering the proposed reforms, A and O levels themselves were created as a response to mounting criticisms of the school and higher school certificates, which had dominated examinations since 1917.

Their creation was intended to abolish grouped examinations where passes in several specified subjects were required. Although they were intended primarily for pupils following academic courses, their use was far more widespread.

Schools or S level, which was created at the same time to assist selection to university, failed to play an important part. As the numbers going into higher education increased, the proportion of S level candidates fell.

The creation of the Certificate of Secondary Education originated in 1938, as a result of mounting demand for the rationalization of other 16 plus examinations. It was felt that O levels were suitable for only a strictly limited proportion of pupils and that an exam with a less exacting standard was

BRIEFING

necessary. By 1965 candidates were able to sit for the first CSE examinations.

The CSE, although taken by 76 per cent of pupils, has however failed to gain comparability with O levels, and few colleges take note of it, while few employers realize that CSE grade 3 is above average.

The Certificate of Extended Education, which is to disappear in 1985, was a similar response but to the needs of non-traditional sixth-formers.

In 1981/82 145,000 young people in England attempted A levels. Most of these were 17, followed by a proportion aged 18. A tiny minority - about 130 - took their exams at 15. The highest number of candidates were those who were taking their A levels and a number of O levels. At 17 some 54,000 sat the exam in this group.

Out of those who attempted A levels, 17 per cent or nearly 128,000 passed them. The percentage passing as a proportion of the school population has increased by two per cent since 1973. The largest category, just under 10 per cent, achieved three or more passes. The smallest was those who passed only one.

In Wales in 1981, nearly 12,000 sat for A levels including a small number of O levels and CSEs.

Altogether out of a total of approximately 44,000 school-leavers some 7,000 passed A level but only under half achieved three passes or more, or roughly 13 per cent of all school-leavers.

Although there are no figures for the number of mature students who passed A level exams in England and Wales, others show that in 1982 there were 24,605 men and women aged 25 plus pursuing such course.

In 1981/82 in England some 450,000 young people attempted O levels, sometimes in combination with A



Pupils face considerable changes in the way they are assessed

levels or CSE's. Most were 15 when they sat the exam and roughly 145,000 did.

Few, it appears, take O levels only, but among those 11,000 or so are 16-year-olds, the smallest 18.

In 1981/82 well over half or nearly 280,000 passed O levels together with some CSEs. The largest category, around 200,000 achieved between one and four passes; the remainder, about one in ten of all school-leavers, got five or more passes.

In Wales for the same period, more than 50,000 young people sat O level exams including CSE at both school and further education college. Around 23,000 achieved an O level pass, around 10,000 got five or more passes, and just under 8,000 one or two passes.

In 1982 in England and Wales, nearly 46,000 men and women aged over 25 enrolled on O level courses. Altogether nearly 600,000 young people attempted CSE exams together with either A level or O levels in 1981/82. Roughly 200,000 attempted CSE only.

Because statistics for O level and CSE are given together, it is impossible to specify exactly how many passed

CSE, but about 250,000 obtained lower grades O levels and CSEs.

As far as destination is concerned, just under half or around 63,000 who pass A levels go on to degree courses and teachers training courses in universities, polytechnics and other colleges. The remainder of A level achievers go on to further education (about 30,000) and jobs or an unknown destination (about 37,000).

Most of those without A levels but with O levels and CSEs go into work or an unknown destination - just under 400,000 do so. Roughly 120,000 of this same group goes into further education.

Altogether for all qualifications, roughly 60 per cent of all school-leavers in 1981/82 went straight into jobs, 20 per cent went into further education and eight per cent on to degree or teacher training courses. The destination of some 80,000 was unknown.

For Wales the proportions were roughly similar, with around nine per cent of all leavers entering degree and teacher training courses, 18 per cent further and higher education and 73 per cent entering jobs.

As far as the creditworthiness of exams is concerned there is little doubt about the status of A levels as the passport to higher education, or the way it is linked by many people to the ideal of academic excellence. Yet many accept that there is a rather weak correlation between A level grades and subsequent performance.

But as Brian Goacher pointed out in his recent book *Selection Post-16* the role of exam results, the use made of A level results in higher education is inconsistent with traditional concerns for depth rather than breadth in the preparation of candidates.

O levels have a general currency and are regarded as an entry ticket to further and higher education and the professions.

CSEs on the other hand suffer from confusion about their comparability with O levels and are little regarded in either higher education or by employers.

Scotland is the model for reforms

Sir Keith Joseph's plans for school exams south of the border one year ago, then a little to Scottish reformers, are to be launched next month.

The Department of Education and Science has closely monitored the Scottish changes which have been percolating since 1977. But what is to be introduced in England and Wales is a considerably modified version.

South of the border, only assessment procedures are being reformulated, while Scotland is also tackling its curriculum of the new Standard grade. And the Scottish Education Department has extended the reforms to include non-advanced further education.

The Scottish Certificate of Education Ordinary grade was never intended for the large numbers of pupils who sit it, and although pupils sitting SCE Higher grades in this year were intended to bypass O grades, most do not, leaving them only two terms to cover the syllabus.

But now the third and fourth year of Scottish secondary education will be transformed thanks to those educationalists whose names are inextricably intertwined as Plannan and Allen, Mun and Dunlop.

Dr James Muir's committee at the curriculum proposed that the pupil should cover eight areas: the basic and literary studies; mathematics; science; physical education; social studies; creative and aesthetic studies; physical activity; religious education and morality.

These changes, which reaffirm the Scottish concern with a broad-based education, will also ensure a greater choice for pupils of lower ability.

This new Standard grade exam is still intended to be taken in fourth year, but will be available at five levels, following the recommendation of Mr Joseph Dunnington's committee on assessment.

Foundation level is intended for pupils who until now would have followed a non-certificatory course; general level is for middle ability pupils; and credit level is for high ability pupils. Pupils do not have to take all their subjects at one level, and may also be awarded a different level than the one for which they are presented.

Credit and general levels will be assessed through written exams at the end of fourth year, while foundation will be judged through a mixture of external exams and internal assessment.

But Scottish school education will also be affected next session by changes in education and training to 16 to 18 years old. The Government's 16 to 18 Action Plan requires current non-advanced vocational further education courses with a series of modules, course units which are usually 40 hours long. The modules will be able to be studied either at schools or colleges.

The SED intends the new system to gradually take in the whole range of non-advanced further education and general vocational courses in schools and off the job training.

A single new national certificate is being introduced in non-advanced further education, to replace the variety of certificates currently awarded by bodies such as the Scottish Business Education Council, the Scottish Technical Education Council, and the City and Guilds of London Institute.

The national certificate will show every module which a student completes, and will be awarded by SCOTVEC and SCOTEC who later this year merge into SCOTVEC, the Scottish Vocational Education Council.

This standardization of non-advanced further education awards is also likely to affect schools.

There is every possibility that there will be one Scottish certificate recording all educational achievement up to non-advanced further education level.

Maggie Richards examines the course units accused of bias and the DES and OU cases

"Your work over the next five weeks is going to introduce you to the way social scientists conceive the economy. It will form one part of the picture of society as a whole which the course is building" - so run the introductory sentences of the Open University's contentious economics foundation course, currently under Whitehall suspicion of Marxist bias. Three booklets, running to a total

OU's head on the block

of 228 pages, make up the controversial block to which the unnamed "professional economists" commissioned by the Department of Education and Science have taken objection.

The entire block is divided for

saying Britain has a capitalist economy and looks at how the processes of production and exchange fit into our picture of the economy; how they are interdependent, how they keep each other going but how they also lead to change.

UNIT 5: "Explains what we mean by

UNIT 6: "Concentrates upon the process of production, examining how it is regulated so that the work within each plant is coordinated and so that new methods of working develop, and how these have developed historically."

UNIT 7: "Focuses on the process of exchange; how it enables production to go on in a coordinated, systematic manner, and what changes have taken place in the process of exchange as capitalism has developed."

UNIT 8: "Puts back together the processes of production and exchange; it shows how the coordination process which in the previous units was seen to be able to work smoothly, breaks down at times when the economy undergoes crises as it did in 1930/31 and was doing at the time this unit was written in 1980 and 1981."

UNIT 9: "Reviews the block by placing the different ideas we have chosen to present in context. How do the different explanations fit together, and what was the economy like at the times in which they were developed?"

The introductory paragraphs of the block also explain why the course team chose to deal with the economic element first: "Knowing about the economy is fundamental to our understanding of the type of society in which we live. It is by its economic processes that it can tell what sort of society we are talking about when we look at modern Britain today; by examining the economy we shall be able to recognize its key features as those of an advanced capitalist society."

The introduction adds: "We could not have structured the block around those particular processes if we were talking about a different sort of economy, such as one of the planned socialist economies of Eastern Europe, a peasant-based economy in the third world, or the feudal economy of medieval England. Each of these has its own way of organizing the process of production such that the process of exchange does not have the same significance that it has in a capitalist economy... So, our choice of economic processes on which to focus and the way we have structured this block, reflect the type of economy we are studying, a capitalist economy."

In formal, the block lives up to the high standard of presentation for which all OU materials are renowned, with cartoons, newspaper clippings, photographs and diagrams liberally interspersed between the text, and employs an informal style of writing to suit the requirements of mature students at first level.

It's a misunderstanding, says course team

Material at the centre of the Marxist bias controversy has been subjected to some of the most exhaustive external and internal scrutiny ever, according to the Open University's vice-chancellor, Dr John Horlock.

In his response to the allegations made by the Department of Education and Science "professional economists", Dr Horlock says they do not raise or identify any new issues.

Pointing out that the material is, in any event, undergoing revision for presentation in 1985, the vice-chancellor's letter to Mr David Hancock, permanent secretary at the DES, adds: "All this material will be subject to external assessment in the way that all our course material is externally assessed. I have therefore not called for further review of the existing material."

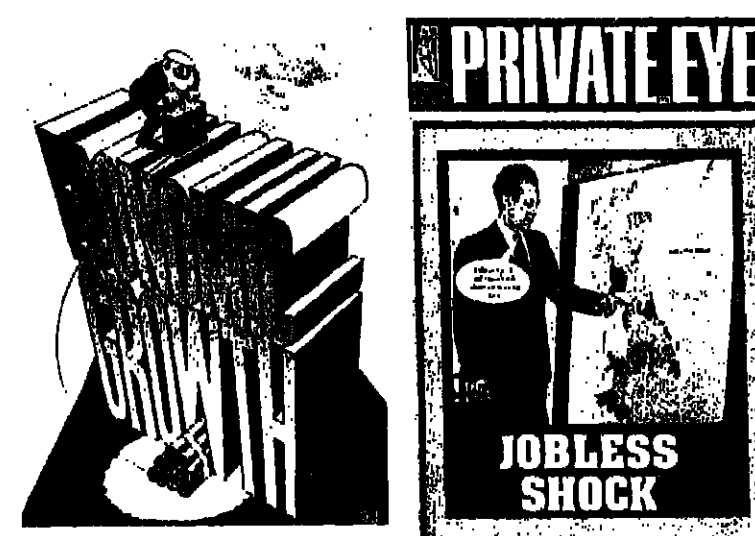
The three television programmes associated with the material will not be presented in the same form, and there will be a fresh introduction to the block. This initial change will precede more wide-ranging alterations planned for 1986.

The letter also explains that in the three years of presentation the course has been updated annually.

Accompanying the letter is a summary response of the course team members, which was prepared for the social sciences faculty, following receipt by the OU of the complaint.

The team says it has always laid great stress on soliciting comment and criticism for the entire foundation course. Extensive student surveys have been conducted, and extensive consultations held with tutors. Students' written work, both essays and examination papers, has been used to assess teaching strategy. During the first three years substantial updating was carried out, and from the outset the aim was to fully revise the course for 1986.

"We have viewed the DES complaint in context of this wide variety of comment which we have already received and responded to. Overall, we find nothing in the DES complaint to change the substance of our views about the original conception of the course, about our experience of pre-



Cartoons, newspaper clippings and satire are used in the material

sending it or about our agreed plans for revision," the team states.

"We must, however, go further than this. The charges made in the DES complaint about D102 are severely undermined by important misunderstandings about the teaching purposes of the block and its place in the course, and the impartiality of the complaints is called into question by an apparently single-minded concern to produce evidence to demonstrate the charge of bias."

Intended as part of a multi-disciplinary approach to the social sciences, the team maintains that Block 2 was not designed purely as an introduction to economics - hence more emphasis was given to historical perspectives than might otherwise be expected. More complex issues were omitted to a more advanced level, to be expounded in greater depth.

"We decided to play down, but not ignore, the controversy between different schools and take parts of a range of theories, putting them into a coherent whole to fit the overall course and block aims."

The team charges the DES report with failure to recognize the role of

abstraction and models within the block and the associated television programmes. The DES allegation of over-simplification fails to recognize the need to use such methods to help students come to a basic understanding of social processes.

The selection of concepts is extremely difficult, especially at foundation level, the team members admit. But, they say, in assessing the team of omitting material, the DES report does not appear to accept the rationale for inclusion of alternative concepts at this stage: "Rather it appears to be a shopping list of concepts from neo-classical economics that have social implications. What is more, some of the suggestions of concepts we should have included are totally out of place in four and a half weeks of introductory study."

At several points, the team claims, the report misconstrues the views put forward in the material. The DES report suggests that Block 2 emphasises the most negative aspects of profit. Yet "very positive effects" are, in fact, specified. The team cites references to the impact of the massive growth in output since the nineteenth

century, which Unit 6 declares "has benefited everyone workers, capitalists and people who fit into neither category."

The team expresses concern that the DES report quotes phrases out of context. It highlights comments in the report about an "obsession with the overthrow of capitalism" in fact related to a specific issue NOT being a reason for overturning capitalism. It also cites the DES report references to Joan Robinson's remarks on a cassette, without acknowledging the qualifying discussion of her views in the unit material itself.

The course team concludes: "The DES complaint does not raise any new issues for D102 and indeed a number of points raised are the result of serious misunderstandings. This relates to our worries over the status of the report especially in the light of the absence of explicit terms of reference within which the 'professional economists' were asked to report."

The team's statement refers to the normal OU procedures for dealing with complaints, and questions whether the DES ought not to have referred the original complaints direct to the university. Instead of engaging a group of "professional economists" to examine them.

"We have shown a clear commitment to engage positively with comment and criticism that we have received, but in the present case we have not been given the opportunity."

"Irrespective of the quality or otherwise of the current DES complaint we do not think that commissioning criticism of the academic quality of a particular university course is an acceptable role for the DES. In our view it constitutes unwarranted government interference and infringes the basic notion of academic freedom."

"Notwithstanding the vice-chancellor's opinion, the course team remains concerned about the coincidence of the DES decision to send this complaint in the midst of complex negotiations about the OU's funding. This is also a time when we are led to believe that the campaign to preserve the OU's long-term position has gained its support."

approaching economics solely from this viewpoint can lead to the sort of deficiencies noted in the block.

"The second theme is essentially Marxist; much of the material concerned would have had its proper place in a course on Marxist economics, so titled," the report asserts.

Dealing with major omissions, it complains the block does not cover sufficiently demand theory, and an approach to value via individual preferences. In an analysis of production no mention is made of factor markets, and of elements affecting labour demand and supply; of the effects of unionism, entry barriers for certain professions; and wage differentials.

"Labour is treated in the block as if it were virtually homogeneous, and there is little discussion of the sense in which other factors, including raw or semi-finished materials and machinery, contribute to the value of the final product."

"Profit is seen purely in terms of the expropriation of a surplus created by labour; no mention is made of its possible role as a reward for risk-taking or for the stress and burdens of entrepreneurship."

No attempt is made to explain modern theory of imperfect or monopolistic competition, or factors which may cause substantial deviation from a welfare optimum situation, the report claims.

"The overall impact of these various omissions is to convey the impression that economics is a much simpler and more limited subject than it actually is, with much less to say about welfare and the conditions affecting welfare than it actually has. In particular, scant justice is done to the way in which the system can resolve an apparent conflict of interests to the mutual benefit of the parties involved."

Examining the content of the block, the report

The pupils who leave school with nothing

Until the current educational reforms, Scotland had no school exam for lower ability pupils. A number of schools in the east of Scotland offer CSE, but the lowest grade of Scottish Certificate of Education exams is the Ordinary grade, normally sat in fourth year.

The O grade was intended for the top third of the ability range, but well over half of Scottish pupils sit it, leading to a high failure rate. Over 40 per cent of pupils leave school with no certificate.

In 1983, 455,400 pupils sat O grades, 381,383 of whom were in fourth year, with a pass rate of 64 per cent. Around 60 per cent of pupils who left school in 1982 with either no SCE qualification or the D and E failure bands of O grade (which count as a qualification) were either unemployed or on a Youth Opportunities Programme. Around a quarter went into full time employment.

Nineteen per cent of boys and 24 per cent of girls with five or more O grade passes were unemployed or on YOP schemes, with 58 per cent of boys and 36 per cent of girls finding full time jobs. A third of girls and a fifth of boys went on to further education.

Sir Keith raises the standard for 16 plus

This spring and summer have seen determination on the part of the Department of Education and Science and Sir Keith Joseph to finally reform the 16 plus exams system after years of indecision. They will also create the Certificate of Professional Vocational Education.

The most important reform and one greeted with delight by almost everybody, except a few Conservative backbenchers, is the one proposed by the National Union of Teachers some 15 years ago - that of merging O levels and the Certificate of Secondary Education into a common exam. It has taken Sir Keith two years to decide whether this should go ahead. It is being said that he was finally convinced not only because he felt this would raise standards in schools, but because joint exams are already a reality in some parts of the country.

The first courses in the new system, which is to be known as the General Certificate of Secondary Education,

will start in autumn 1986 and the first awards will be made two years later. A crucial element of the system is a move towards a grade related criteria - the testing of absolute standards as in a driving test.

The new system is to have seven grades, A, B and C will incorporate standards at least as high as the corresponding GCE O levels do now and D, E, F and G will be on par with the lower level and CSE grades. Bright pupils will be able to get distinction certificates if they get good grades in a range of key subjects.

Responsibility for the exam is to be shared by the GCE and CSE boards, which are to be reduced from the present 20 to five. The exams will be supervised by the Secondary Examinations Council which is currently drawing up national criteria which will govern all syllabuses together with the boards.

Before launching the 16 plus, Sir Keith had already moved on an issue which has been debated for some 16 years, the broadening of A level studies. A number of proposals such as N and P levels and I levels bit the dust because they were never seen as meeting that ideal.

There is however a healthy indication at least from the university sector that the proposed Advanced Supplementary levels do have the case and have a chance of coming into being as planned in 1986, with exams being sat in 1988.

The A levels proposals do not on the surface differ very much from the earlier proposed intermediate levels. But Sir Keith stressed in May that this was there was no suggestion of reducing standards.

A levels are intended to be as intellectually demanding as A levels and to cover not less than half the ground dealt with in such a course. It should enable students specializing in, for example science and maths to

pursue English, languages and other subjects beyond O level and vice versa. It is envisaged that students currently taking four A levels might now take three A levels instead of three AS level, while those who take three A levels might take instead two A levels and two AS levels.

The Certificate of Prevocational Education, or 17 plus, or Career Foundation Award as it may become known, owes its origin to a fundamental document *Basic for Choice* produced by the Further Education Unit in 1979.

The CPVE is aimed at 100,000 youngsters, both those with O levels and with no qualifications. Some 40,000 are expected to be awarded an interim 17 plus certificate this summer.

The intention is to introduce the exam by September next year. Each youngster will be offered a programme which enables vocational interests to be explored across a wide area or concentrated in a narrow sector.

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This should have been called Marxist economics, say 'professionals'

Deficient in coverage of economics and unbalanced in treatment of many of the topics it does cover - conclude the unnamed "professional economists" commissioned by the Department of Education and Science to inquire into possible bias contained in the second block of the Open University's social sciences foundation course.

Their final comments are damning ones: "As a result of these defects, the unaware student is likely to emerge from the course with a partial and inadequate picture of how the British economy works, too little appreciation of the way that resources are allocated, a bias towards Marxist perceptions of the primary importance of class conflict and inequality, and little conception of the extent of his own ignorance. It would have been possible within the compass of this block to provide the student with a balanced and useful introduction to the economy rather than a defective and distorted one."

Bias, says the group which produced the report, may be characterised mainly by omission, a failure to recognize the whole story.

An introductory text should give reasonably comprehensive coverage of relevant concepts and analysis to the depth necessary; and offer reasonable balance in the treatment of different concepts and topics. A biased text would display significant shortcomings in one or other of these areas. The block in question demonstrates shortcomings in both, the report maintains.

The shortcomings arise from an attempt to establish the block on two major themes: that economics is "essentially a study of the social relations under which economic processes take place; and in a capitalist society these relations can be summarized into conflict between capital and labour."

The standpoint of the first theme is reasonable, as part of a general social sciences course. But

approaching economics solely from this viewpoint can lead to the sort of deficiencies noted in the block.

"The second theme is essentially Marxist; much of the material concerned would have had its proper place in a course on Marxist economics, so titled," the report asserts.

Dealing with major omissions, it complains the block does not cover sufficiently demand theory, and an approach to value via individual preferences. In an analysis of production no mention is made of factor markets, and of elements affecting labour demand and supply; of the effects of unionism, entry barriers for certain professions; and wage differentials.

"Labour is treated in the block as if it were virtually homogeneous, and there is little discussion of the sense in which other factors, including raw or semi-finished materials and machinery, contribute to the value of the final product."

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No attempt is made to explain modern theory of imperfect or monopolistic competition, or factors which may cause substantial deviation from a welfare optimum situation, the report claims.

"The overall impact of these various omissions is to convey the impression that economics is a much simpler and more limited subject than it actually is, with much less to say about welfare and the conditions affecting welfare than it actually has. In particular, scant justice is done to the way in which the system can resolve an apparent conflict of interests to the mutual benefit of the parties involved."

Examining the content of the block, the report

finds evidence of definite bias, particularly in Unit 5. An impression is created of a society divided into capitalist and working classes engaged in a struggle over share of profit.

"Such conflict no doubt does and possibly even should go on. What is wrong is that in both this and subsequent units, this particular (and most negative) aspect of profit is given excessive prominence in comparison both with other features of the economy in general and with the more positive roles of profit."

"The unit seems at great pains to conclude that Britain is basically a captive economy. The rise of the middle classes, and of managers, the changing ownership of capital, and the greatly increased role of the state, are all mentioned but are regarded almost as irritating complications which should not be allowed to obscure the essential features of the model."

In general terms, the report charges the OU material with being over-simplistic in its assessment of Britain as basically a capitalist society, and in its depiction of the working class as those "unable to get an income except by taking a job."

Unit 6 is criticized for failure to describe how profitability is determined and for its use of the Lucas Aerospace case - where workers failed to secure manufacture of kidney machines as an alternative form of production - to establish that everything is determined by the profit motive. Profit therefore is identified as an apparently arbitrary and "rather ugly" force driving the economy - including the government.

Commenting on Unit 7, the report identifies the major defect as: "having set itself the reasonable task of helping people to analyse the 'market' versus planning issue, it fails even to do half of the job. There is an unsatisfactory discussion of consumer sovereignty on the market side, and virtually no discussion at all of how a planned economy might work."

Day-to-day political concerns have dominated the 18-week miners' dispute. Below, three

Warm glow in the nation's hearth

Coal has a special place in British history, whether political or economic, with the past casting strong shadows over the present, affecting our perceptions of day-to-day realities. Politically the memories of 1921, 1926, 1972, and 1974 give a special significance to present circumstances. The same is true in an economic sense, with the wide - if vague - public awareness of the industry's historical importance in the growth of Britain's industrial economy.

Cheap and abundant coal has often been claimed as a unique national advantage in explaining Britain's precocity in becoming the world's first industrial nation - in competition, of course, with other supposedly unique advantages, such as the Protestant non-conformist entrepreneurs, a specially favourable legal and political context, an expanding colonial empire and other features of the British scene.

One cannot quantify such competing claims but Britain was certainly coal using economy on a scale quite unrivalled in the world, and long before the industrial revolution of the late eighteenth century, England was fortunate in her deficiencies, with a progressive relative shortage (and hence rising relative costs) in two of the main natural resources of medieval technology - plentiful timber and water-power sites - while being blessed with a plenitude of coal measures close to the coast and to navigable rivers. Thus both a push and a pull effect were exerted on costs, a combination no other country enjoyed in these centuries, creating strong incentives towards adopting a mineral-fuel technology.

Already in the sixteenth century "sea-coal" was the basis for such industries as brewing (in London), soap-boiling, salt-making, brick-making, dyeing, with a rising domestic market in London and coastal towns which probably took the greater part of output. Samuel Pepys spoke of the "great misery the City and kingdom is like to suffer from want of coals . . . is very visible and, is feared, will breed a mutiny . . . when the Dutch were blockading the Thames estuary in 1667.

Coal stood not beside but above all other commodities

All metals except iron were being smelted from mineral fuel before the end of the seventeenth century. Iron itself was first successfully smelted from coke in 1709, with the innovation spreading rapidly after 1760. Steampower had begun to make demands on the coal industry by 1712, the initial use being to pump out mines and 300 engines were probably in use before James Watt's improvements. Then came rotative motion for steampower, the gas industry, railways and ships, which produced a steadily increasing, interlocked, demand, for coal as the technological matrix of the economy moved towards a mineral-fuel base.

All roads seemed to lead towards progressive reliance upon machinery, the iron and steel industries, steampower, engineering, urbanisation, and coal stood at the back of these interconnections. No wonder that Jevons claimed in 1865 that "coal stands not beside but above all other commodities". Energy consumption per capita doubled in the eighteenth century, rose a further fivefold in the nineteenth and by another 50 per cent between 1900 and 1975. Per unit of output, however, energy inputs tripled from 1780 to 1880 but then steadily declined because of rising efficiency.

Very few commodities are measured in millions of tons. Output of coal in Britain was already three million tons by 1700; 15 million tons by 1800; 50 million tons by 1850 and almost 200 million tons at its peak in

1913. French coal output did not reach three million tons before 1840. Yet despite this formidable expansion, with progressively deeper pits, coal prices did not increase beyond general price trends and labour productivity rose until the 1880s (from possibly 100 tons per man of the labour force in 1700 to over 300 tons in 1880).

Although this progressive use of coal and the technology it embodied was strategically vital, only a small percentage of motive power in the industrial revolution in the eighteenth century came from steam and the coal industry was small - with less than 60,000 miners in 1800 and still less than 150,000 in 1830, compared with 400,000 workers in cotton, almost a million in textiles as a whole and one and a half million in agriculture. But with output continuing to rise, combined with falling labour productivity after 1880, an army of coal miners had grown to 1,127,000 strong by 1913, leading the trade union membership and strongly militant.

Decline in the size of the industry dates from 1913, broken with years of partial recovery of output after war-time contractions and by the occasional dramatic impact of strikes in 1921 and 1926, even though labour productivity rose substantially in the aftermath of 1926 (which proved a turning point in this respect). Attrition, however, came only very slowly.

In 1938, for example, 93 per cent of total national energy consumption was met by coal; even though this does not reflect the rising strategic importance of oil and the innovations this was making possible, particularly in transport, for the functioning of the economy just as the minor role of coal in the first industrial revolution does not reveal its operational importance. Coal is still supplied 90 per cent of total energy requirements in 1950, but this share fell rapidly to less than 40 per cent after 1975. Strategic dependence remained for specialized sectors, such as the iron and steel industries, power generation (both capacity in the latter was also being diversified) and not least, in political as well as economic terms, domestic hearths.

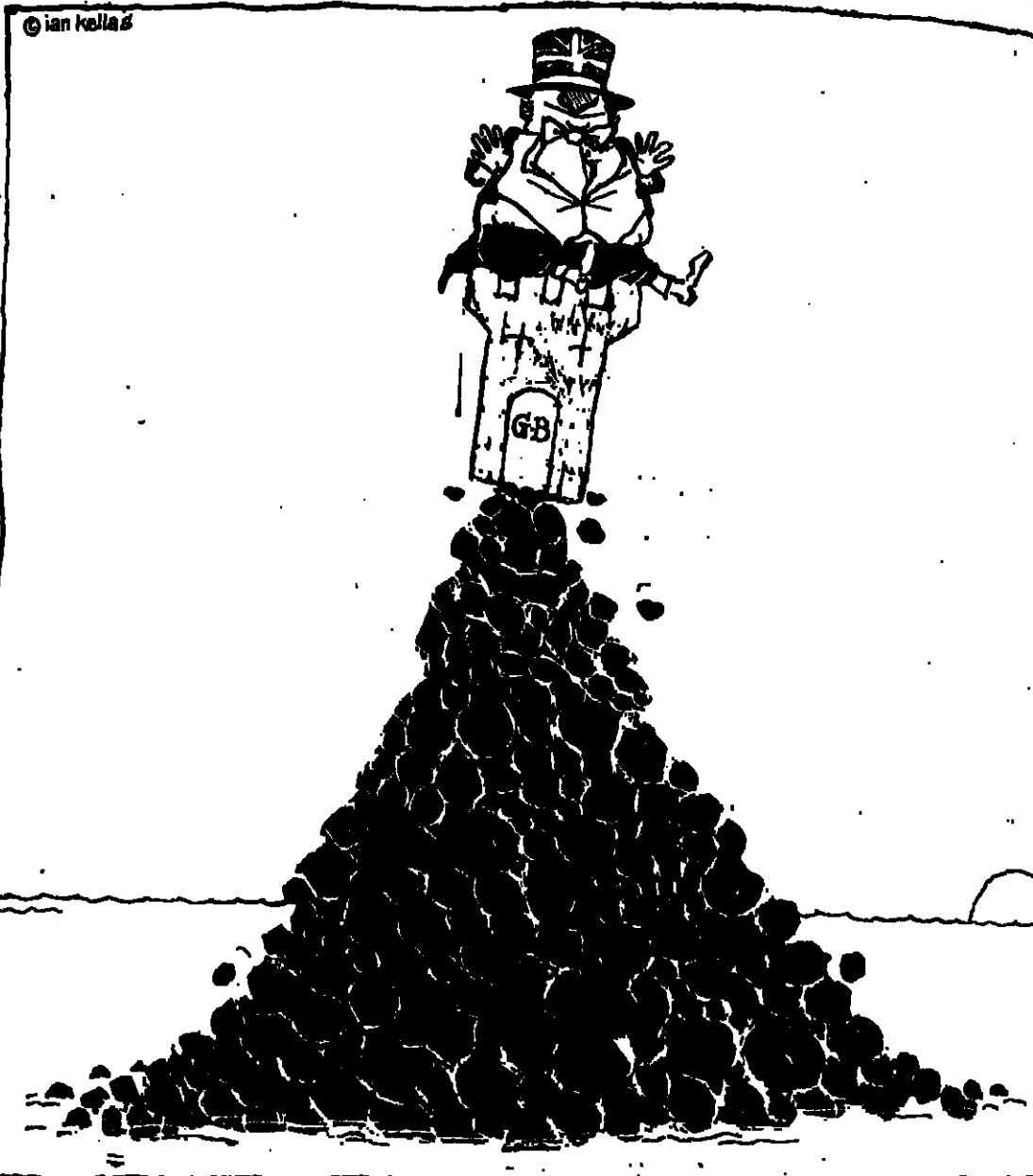
In the early 1970s, output in the industry was down to 120,000 tons and the labour force had shrunk to 300,000. And then oil prices multiplied almost tenfold in the rest of the decade. Extrapolating trends of energy consumption, particularly oil, against known reserves brought claims that an energy crisis for non-renewable forms of energy would soon loom over the world economy. Radiation hazards were slowing down the expansion of nuclear power in many countries. Coal reserves, on the other hand, were proved at 300 years' supply in Britain.

Was the industry therefore at its nadir after the long generations of attrition? Did the Plan for Coal of 1974 mark a long-term turning point for the industry, which in the far perspectives of the industry would be seen to provide the necessary energy base for future national industrial regeneration and expansion in a completely new way that the long historical perspective reveals its importance for the first industrial revolution and the sustained industrial expansion of the nineteenth century?

It is not for a historian to predict. No one can say for certain. But it will be determined, as the economy is determined more widely and was determined in the past by the record of relative costs and prices, incentives for investment and human relations in the industry; not simply by the ineluctable consequences of geology.

Peter Mathias

The author is Chichele professor of economic history at All Souls College, Oxford.



Coal reserves of a nation contribute significantly to its economic stability, but only if the nation knows how to use it.

Nations like Japan without coal are exposed to the turbulence of world markets. It is an act of geological generosity that the United Kingdom finds itself so well endowed with coal and it is our responsibility to see we make best use of it.

But do we know what is this black and rather dirty endowment? We dig out of the ground slightly less than one billion tonnes of coal per year. We have reserves for several hundred years and yet we import coal. It is confusing to learn that coal mined in one area is transported into other coal producing areas. Why not use the coal where it is mined and stop this apparently unnecessary movement?

The answer is that coal is just not for burning. No longer do sweating men shovel coal on to the burning grates of furnaces. No longer does thick black smoke pollute our cities and destroy the lungs of our citizens. We have learned much about the use of our coal to our mutual benefit, acknowledging that not all problems as yet have answers.

How has this been brought about? Because over recent years, from many perspectives, we have looked at coal very carefully into the way it burns, how it can be made into coke for the blast furnaces, how it can be made into liquids and gases and what the chemist says about how coal is put together as the rock-like substance that it is. In this way we ensure its contribution to the stability of our economy.

This research into all aspects of coal, how it was made, how it can be mined, how it is put together and thus how coal is not a single kind of substance. Rather, coal exhibits a wide range of properties with selected coal-types doing particular jobs better than others. This explains coal imports and coal movements. The most appropriate coal has to be taken to where it is best used and that place is not necessarily where it is mined.

To the geologist, coal is a sedimentary rock formed from organic plant debris over a period of billions of years. To the chemist, coal is a source of energy, and of organic chemicals. The term "coal" is used by geologists, chemists and mining engineers alike to describe coal-types ranging from the

peats and lignites to the most mature of coals, i.e. the anthracites.

Thus, coals are described in terms of their geological maturity with the term "rank" being used to describe this maturity. The rank of a coal depends upon the geological time of growth of the parent vegetation and the subsequent history of decay, burial and rock movement associated with the coal deposit.

Coal-types available to us in bulk form vary considerably in how they are put together, what they are made up of, their energy (calorific) value and ash contents. A useful instrument to examine coal-types is the optical microscope where light is reflected from polished surfaces of coal to reveal the many materials which are to be found in coal-types. Because coal originates from trees, ferns, grasses etc, often seriously modified by forest fires, the resultant biological features of this parent vegetation as broken down in the primeval swamps become established within the resultant coal-types.

The study of coal by optical microscopy is called coal petrology. Such studies show very clearly that coal is a complex mixture of many materials of biological origin some of which are extremely reactive. Within others are similar rank, there occur significant differences in the type and amount of these biological materials (called macerals).

Coal is not a solid material like a piece of metal. It is a porous solid; in fact half of its volume is taken up by space or porosity, the diameter of very small pores being the size of, for example, a molecule of oxygen. These very small pores are extremely important to the coal because they allow chemical reagents to interact inside coal particles rather than on the outside surfaces.

There are so many of these small pores that the internal area within coal is equal to that of several cricket pitches (per gram). The porosity of coal and the associated surface area are not constant for all coals but

change as the rank of coal-type changes and varies also with the biological or maceral content. Coal is formed from organic material which has been buried for periods of up to three million years. During this period it has been kept isolated from atmospheric oxygen, and it is essentially stored within the earth surrounded by methane gas contained in the pores and other spaces in the coal seam. Hence on exposure to air, at the time of mining of the coal, the oxygen of the air instantly becomes chemically attached to the coal surface and this process (oxidation) can continue for periods of months and years should the coal be stored for these periods of time.

This process of chemical attachment of oxygen to coal produces heat. Should adequate cooling be absent then a dangerous rise in temperature can result in spontaneous ignition. This is a problem which is met in coal tips.

Source of energy

academics offer a different perspective on the past and future of the coal industry

Anyone who has visited the two major research institutions of the National Coal Board, the Mining Research and Development Establishment and the Coal Research Establishment cannot fail to be impressed by their excellent facilities and by the quality of the work carried out. Both establishments complement their own programmes by supporting university research.

The CRE is mainly involved with the utilization of coal, i.e. combustion, carbonization, gasification, liquefaction, etc. The MRDE is mainly concerned with short and medium term research and development into coal winning and preparation of coal for the market. It also engages in a very effective programme to introduce new technologies into industry, acting as the interface between innovation and operations.

Their success in this area and their close cooperation with the mining equipment manufacturers is internationally recognized. The MRDE represents by far the largest investment made by the British coal mining industry in research and development.

The MRDE supports medium/long term research in the departments of mining engineering of British universities by way of annual extramural grants for identified projects, that can be measured in hundreds of thousands of pounds each year, and also by specific research contracts. Some of these contracts involve EEC funding. This close cooperation between the MRDE and the university departments ensures the research is coordinated, that the findings are passed on to industry and avoids duplication of effort.

Since its inception some 30 years ago this system of funding has produced valuable results for the NCB, but it has probably been of even greater value to the universities, because it:

- ensures university staff are in close day-to-day touch with industry;
- introduces greater realism in the teaching of undergraduates;
- provides equipment for university departments that would otherwise be unobtainable through normal university funding.

that's not just for burning

types be fully examined. It is only within recent years that the importance has been realized of variations within coal-types upon industrial utilization. Not only is it necessary to understand the home-produced market but also coals from abroad and not available within the UK.

Further, coal is not a constant, invariable commodity. Shipments of coal to industry vary because of changes in source and supply. A different mine may be used. Coals vary within a given seam and this becomes apparent only after the coal is mined. Storage and transportation of coal can affect its properties.

Industry today spends considerable amounts of research money (millions of pounds per year) to be able to describe coal precisely. There are two principal reasons for this. The first is to provide analyses of coal whereby the chemical composition, ash (mineral) content, maceral composition, burning and coking behaviour, energy content etc are provided as a regular, on-going service. This is a form of quality control making certain that coals are not used incorrectly or inefficiently.

The second reason for this expenditure is to finance research into the use of coal realizing that a sound fundamental knowledge of what is to be used and the behaviour of coal during coking and coking is necessary for efficient coal utilization.

An overview of research begins with coal exploration and estimation of reserves. The mining of coal and its transportation to pit-head and the use of the coal to physical breakage so its macrostrength behaviour has to be known.

Coal is never mined as a clean commodity; it has to be washed as free as possible of associated mineral matter (dirt) with special attention given to the removal of sulphur-containing mineral matter such as pyrites. Sulphur in flue gases is a remaining problem. Research into the surface chemistry of these washing processes continues in order to reduce costs and increase efficiency.

The efficient use of coal now requires that all properties of the coal



A mine of information

In addition to NCB funding the following also provide research funds for the university departments of mining engineering: the Science and Engineering Research Council, the Mining Equipment Manufacturers, the Health and Safety Executive.

The SERC set up a specially promoted programme for coal technology in 1979 and to date some £3m has been awarded to universities and polytechnics for research activities. Of this about 40 per cent has been allocated to coal winning and preparation, the remainder being allocated to combustion, hot gas clean up and conversion research.

Prior to this programme the mining engineering departments were markedly unsuccessful in their applications for SERC funds, to the extent that they were disinclined to submit

applications. The coal technology programme has greatly changed this situation. The funds have been allocated to activities very remote from the "pick point", that is where the coal is produced and where the maximum economics can be made. Many fear that when the programme ends this year the situation will revert to its former state where the larger university departments, that is mechanical, chemical and electrical engineering, chemistry, etc will again dominate the allocation of funds.

One ray of hope is the newly launched NCB-SERC co-funded programme. Although the initial funds are somewhat limited, they will go at least some way in ensuring that research funds to the mining engineering departments are not turned off. The mining equipment manufacturers

provide a small but valuable part of the mining engineering departments research funds. They are mostly interested in short-medium term research. Often urgent answers are needed and although this may not be the style of research that appeals to many university departments, it is welcomed by the mining engineering departments as a challenge and a tonic.

The SMRE is mostly concerned with research into health and safety in the mining industry. They support research in a number of universities but provide only a minor part of the research funds of the mining engineering departments.

The following universities have mining engineering departments researching coal mining topics: Strathclyde, Newcastle upon Tyne, Leeds, Nottingham and University College, Cardiff. Of the other mining schools, the

diets into coal properties. The physical chemist becomes involved in assessments of internal surface area of coal and the chemical composition of those large internal surfaces. Analyses are required of elemental composition.

The question of how sulphur is attached in coal-types must be answered in the hope of extracting sulphur prior to combustion or within the combustion chamber. Such sulphur forms oxides of sulphur which pass into the atmosphere and may be responsible for the acid rain problem.

The analytical chemist and spectroscopist investigate the detail of the organic chemistry of coal. The kineticist investigates the oxidation and combustion characteristics of coal and how oxidation influences burning, liquefaction and gasification. The organic geo-chemist probes ever deeper into the maceral structure of coal.

Research in universities into coal science and fuel technology is financed in several ways. Industry, eg the NCB, CIGB and British Gas place research contracts directly with a research group, or the Science and Engineering Research Council CASE award system enables a student to work with industry on a defined topic of coal science, or the SERC in association with industry will support postdoctoral research.

Because of major escalations of world oil prices the research effort into coal has increased severalfold. Research these days is expensive and the need exists for a good return on financial investments. Currently there appears to exist an increasing emphasis to study coal to assess more precisely how it is made, what it is made from and how the many materials in coal are held together. At the same time there is intense industrial interest in the application of this fundamental knowledge to the industrial practices of burning, coking, liquefaction and gasification.

Much remains to be done; coal is a difficult, ever changing substance to study and presents a significant challenge to researchers within UK universities. The current abundance of oil and slackening price provides a lull to upgrade knowledge of coal further. Its day will come for sure.

Harry Marsh

The author is a member of the Northern Coal Research Laboratories at the University of Newcastle upon Tyne.

University of London (Royal School of Mines) and the Camborne School of Mines concentrate on metal mining, but North Staffordshire Polytechnic makes a significant contribution to coal mining research.

In the past mining engineering departments tended to specialize in a specific area, usually the specialization of the head of the department, for example Newcastle in rock mechanics, Nottingham in mine ventilation, Leeds in surveying, etc. Over the past 10 years however most departments have recognized the catholic nature of the discipline of mining engineering and followed the example of University College, Cardiff, in researching on a broad front.

Probably the most researched field is that of rock mechanics with Strathclyde, Newcastle, Leeds, Nottingham and Cardiff involved. They cover topics ranging from strata control, coal face support design, subsidence, design and stability of excavations, layout of mine workings, to excavation engineering, rock behaviour under different states of stress, outbursts of coal dust and methane, water inflow and the stability of opencast mines.

The next popular mainstream activity is mine environmental engineering, where Strathclyde, Leeds, Nottingham and Cardiff are concerned, covering computer planning of mine ventilation systems, methane emission, heat and humidity, noise, now a vital area in view of pending legislation, dust, mine lighting, radon emanations, ranging to surface ground vibrations due to underground operations.

Fine coal below 0.5mm which represents up to 15 per cent of salable material and creates both separation and handleability difficulties which necessitate extensive research. This is presently the major field of research in coal preparation and is being done at Leeds, Nottingham and Cardiff. Further research areas are in sulphur reduction. Nottingham is concerned with conventional methods while Cardiff is investigating a new approach using bacterial treatment.

Mine surveying is another mainstream activity, the major thrust being towards the use of electronic "total station" equipment with data recording for use with automated draughting using a computer and plotter. This work is intended to lead to computer aided mine planning as well as streamlining conventional surveying. Nottingham and Cardiff are considered centres of excellence in mine survey research.

Other areas of research include mining geophysics (Strathclyde, Leeds, Nottingham and Cardiff); mine electrical engineering (Nottingham); economic studies (Newcastle and Nottingham); and geostatistics (Leeds). In addition to these programmes North Staffordshire Polytechnic is actively researching the rock mechanics, mine environmental engineering, coal preparation, mine electrical engineering and economic studies areas. It is also engaged in a bacterial treatment approach to the reduction of sulphur in coal.

In cash terms the research efforts of the university mining engineering departments are relatively small compared with the MRDE, but with a research worker costing on average about £8,000 per year, the sponsors get very good value for their money.

The cooperation between the NCB and the university mining engineering departments has produced tangible benefits for both sides but it has also produced some intangible benefits for the universities. These include:

- enhancement of teaching;
- contact with senior staff facilitates the arrangement of visits by students to mining operations of special interests, lectures by specialist NCB staff, etc;
- students can be engaged in ongoing research programmes for their final year project work, creating far greater interest and improved performance as they feel they are working close to the "pick point".

All this helps produce better mining engineers, who are more readily integrated into industry and who will have a greater impact on productivity and economic operations.

T. Atkinson

The author is head of the department of mining engineering at the University of Nottingham.

BOOKS

Augustan hierarchy of signs

Probability and Literary Form: philosophical theory and literary practice in the Augustan age by Douglas Lane Patey
Cambridge University Press, £27.50
ISBN 0 521 25456 6

Dr Patey's book ends appropriately with a strongly argued plea for the importance of historicity in the exercise of critical judgments: to be ignorant of the past is to be imprisoned inescapably in the present, bound by modern and necessarily fashionable "procedures and principles of reading". His study is a strenuous, often difficult, but rewarding attempt to demonstrate the importance of this contention by recreating Augustan assumptions about the nature of literary works.

On one level the argument is familiar. Just as thinkers used physico-theological ideas to interpret the world of nature, seeing Creation as a divinely ordered structure of signs, a language to be read, so literary works, which are imitations of nature, were seen as hierarchies of signs that invite the reader to move in understanding from the local effect to underlying cause, from the "body" of a work to its "soul". A smaller-scale analogy of the critical process might be seen in medical diagnosis where alertness to minute symptoms (signs of disease) is the only route to understanding the patient's condition.

Some such attitude to interpretation must be found in any age which sees the writer as artificer, but Dr Patey's concern is to relate a specifically Augustan view of literature as a structure of signs to developments in the philosophical theory of probability, and to argue that important aspects of the late eighteenth-century shift towards Romantic aesthetics are bound up with changing attitudes towards the psychology of probable inference.

The first part of the book is concerned with attitudes towards scientific and other forms of truth and argues that there is an essential continuity between Renaissance and Augustan attitudes towards the interpretation of evidence. Certainly a high regard was still paid in the Renaissance to authority as a source of certain knowledge, but thinkers also categorized scientific evidence along a spectrum of certainty, ranging from the established proofs of a "high" science like mathematics to the less certain proofs of such "low" disciplines as medicine. But it was assumed that there was a difference between our way of giving assent to "certain" and "doubtful" propositions. What distinguished the late seventeenth century was Locke's attempt to show that probable and certain knowledge arise from the same kinds of mental operation, and hence are epistemologically continuous. At every stage of knowing we are therefore assessing probabilities. In making these assessments we use, according to Locke, the faculty of judgment to establish the non-demonstrative connections of ideas.

Dr Patey sees this elevation of judgment as a critical and ultimately subversive factor in the history of attitudes to probability as they apply to literature. Renaissance psychology had referred probability to the imagination, "a faculty that mediated between sense and intellect" and which could mediate also between literary categories, as truth and fiction, history and romance, or the probable and the marvelous. When the function of assessing probabilities is given to judgment, an intellectual and divisive power, this wider mediation breaks down and critics are increasingly likely to put "ordinary" and "poetic" truth in different categories. So much so that by the late eighteenth century Thomas Watson's distinction between the generally accepted and literature was judged its fidelity to the inward truth of feeling rather than to external nature.

This broad theoretical discussion is presented in great detail and sup-

ported by reference to a wide range of Augustan critics, is tested against close analysis of literary works by, most notably, Smollett, Fielding and Sterne. Only in the case of Smollett could it be claimed that a significantly new reading results. Here it is persuasively argued that the preoccupation with signs is unusually explicit (provoked by Smollett's medical interest in physiognomy) and that a concern for the uncertainties of both verbal and visual communication is central to his novels, particularly the poorly regarded *Ferdinand Count Fathom*. The discussions of Fielding and Sterne, although fascinating in their detail, do not to the same extent provide a new view. Fielding's demand for the exercise of judgment in interpreting signs and Sterne's interest in the direct sentimental communion between people – the focal points of interest here – have been much discussed. But Dr Patey places these issues in a new context and gives a challenging view of the relation between literature and philosophical ideas.

John Chalker

John Chalker is professor of English at Westfield College, London.



Sir Joshua Reynolds's portrait of Samuel Johnson, circa 1775, commonly known as the "Blinking Sam" portrait because it emphasizes Johnson's short-sightedness. It is reproduced in the catalogue to the exhibition *Samuel Johnson 1709-84* on show from next week at the Arts Council in Piccadilly. The catalogue, published by the Herbert Press, is £9.95 and £6.95 (at the exhibition, £5.00).

Just for fun

A Dictionary of Shakespeare's Sexual Puns and their Significance by Frankie Rubinstein
Macmillan, £25.00
ISBN 0 333 34308 5

After Eric Partridge's pioneering survey of Colman's essay on Shakespeare's bawdy, it was inevitable that someone would attempt to provide a complete list of Shakespeare's sexual puns; and this is what Frankie Rubinstein has set out to accomplish. The book consists of a short introduction, in which some of the principles of the dictionary are explained, followed by the dictionary proper.

Two principles seem to have influenced the compiler most in her work. The first is that if a passage is dull or flat, then one should look for a pun. This is little more than a kind of barbed commentary, for Shakespeare is evidently not allowed to write lines which are "trite, self-evident, repetitive, or even lacking in sense". It also suggests that puns were principally used to carry passages which were

Sympathies broadly shared

The Character of Swift's Satire: a revised focus edited by Claude Rawson
Associated University Presses, £22.50
ISBN 0 874 13 209 6

"To what are we referring when we speak of *Gulliver's Travels*?" is the question Ricardo Quintana begins by asking in his contribution to this excellent collection of essays. Professor Quintana, who has been writing about Swift with the greatest authority for fifty years, has won, without doubt, the right to express the insecurity of the reader in the presence of the text – any text, perhaps, but especially one as protean as *Gulliver's Travels*. Irony as profound as Swift's depends not just on the reader's alarm, isolation, ambivalence, but also on the implied challenge to accept or deny the au-

thor's ultimate competence – does he know what he's doing? Does his undeniable power depend on a coherence which we must struggle to apprehend, or an incoherence as radical as that of which we, the reader-victims, are accused?

One cannot pretend to find definitive answers to these questions in this collection. What we do have is stimulation and variety in a suite of essays so changed from the book's earlier form *Focus: Swift* that it should be treated as a completely new publication. Professor Rawson disclaims any attempt at conformity of opinion, but asserts "a generally similar outlook" and "sympathies broadly shared". Yet even this is not easy to discover, except in a negative way. There is no one to argue what has come to be called the "soft" view which grants Swift essential competence and coherence, the scheming serenity of a Prospero in the midst of all the confusion, danger and terror he has raised.

Both "soft" and "hard" responses are reading strategies which seem to contain an element of self-defence, and, perhaps because of this, both have their absurdities and excesses. For instance, Ian Watt, for all his expertise as a historian of eighteenth-century modes of expression, is cap-

able of a certain smugness in the presence of Swift's irony. In the case of *Gulliver's Travels*, he argues, Swift merely intended *Gulliver* to be a climactic reaction to a pre-emptive vision of the "Yahns" and the splendors of reason – Houyhnhnms; and the book's brightness of the vision was to be end his days in a comically hyperbolic revision from the actual scene.

Watt argues that Swift's intention is misfired because he didn't account for the sympathy he had created for *Gulliver*. Inferences about intention are not rewarding areas for debate; it may be argued that what we are not an error but a discovery, in which savage scorn and an oblique humor are elusive mode of sanity find a more subtle harmony. And, if we can draw from debating intention, we may find a better quarry in a discussion of present and absent potentials in text so complex and disturbing.

John Traugott on *A Tale of a Tub* too rhetorical in his argument for taste: it is perhaps for this reason that he finds his account of the relationship between Swift and his patron William Temple and its influence on the tone of Swift's early satire very convincing. Richard Feingold is very interesting in his account of the edifying energy of affection in *Swift*. Pat Rogers (or the editor) is uncertain whether to entitle his piece "Swift and the Revival of *Chick*" or "Swift and the Revival of *Chick*". But either way it provides fascinating insight into Swift's language play. Jenny Meziems explores some of the contents for *Gulliver's Travels* in classical and Renaissance wit and fantasy, and makes a particularly good case for looking at Erasmus as a point of reference to Swift. Irvin Ehrenpreis's recommendation of Swift as a letter writer remains powerful and engaging. As there are good accounts of Swift's politics from E. P. Lock, and Swift's Anglo-Irish tradition from J. C. Beckett.

The editor's own study of Swift, Johnson and human resilience, is considerably revised and extended. In *Focus: Swift*, he provides the basis for a collection which is stimulating, informative and comprehensive.

David Ward

David Ward is senior lecturer in English at the University of Dundee.

Wordsworth

A new selection of the *Letters of William Wordsworth* has just been published in paperback by Oxford University Press at £3.95. Edited by Professor Alan G. Hill, the volume presents 162 letters, eight of which have not been published before. In the introduction, the editor characterizes the tone of the letters as "surprising matter-of-fact, direct and suited to recipient and occasion".

you are now a maid" (*Romeo and Juliet* 1.1.72-3). It is not revealed in what the "fun" consists in understanding *cunt* as "cunt" or whether it is a suitable pun in the mouth of Lady Capulet or one which assists the development of the plot or dramatic theme. Naturally there is no discussion of the sounds involved or whether it is likely that contemporary speakers thought the two words did or could sound alike. It is sufficient for one word to have a general similarity to another for it to be classified as a pun. One might think that this possibility interfered with the performance of the plays as members of the Elizabethan audience started to laugh at puns they thought they had discovered in the plays, which in Rubenstein's view are closer to crossword puzzles than to dramatic pieces. As it happens the reader of the introduction will be puzzled when he turns to the dictionary where *cunt* as a sexual pun is not listed.

The arrangement of the entries in the dictionary is confusing. The first word included is *Abhor*, which has the comment, for it can hardly be a definition: "where (K[ö]keritz). *Abhor*son: a where's son (Colman); *Partridge*).

N. F. Blake

N. F. Blake is professor of English language at the University of Sheffield.

BOOKS

Long-term care

Ideas on Institutions volume one: Analysing the Literature on Long-term Care and Custody by Kathleen Jones and A. J. Fowles
Routledge & Kegan Paul, £6.95
ISBN 0 7100 9721 2

Institutions have been bad news in western countries for a considerable time, and given the social turmoil and collapsing authority of the postwar period, their decline is not very surprising. But were they (are they) quite so awful as the average drama documentary on television would suggest?

Kathleen Jones and A. J. Fowles point out that much of the written work on the subject has not been subjected to sustained and coherent analysis; it has hardly, in fact, been subjected to any analysis at all. Just to "review" the major literature of the past two decades... written to clear our own minds", and these 205 lucid and jargon-free pages will do the same for anyone else who feels the need. The book's method is to pick out each significant writer's essential propositions, to look for their derivations, and to see how much empirical evidence can be found in support of these. But the overwhelming problem is that "people who run institutions seldom have much background in sociological theory. Sociologists... have little practical knowledge of, or experience in the problems of running institutions".

Inevitably, the first name to appear is Ervin Goffman. His empirical base was very small – one year's work in one hospital – while his documentary sources are highly selective and not always acknowledged. Since he does not describe actual institutions, but features said to be characteristic of them, there is no hypothesis that can ever be disproved by research – only a model against which reality can be measured. Goffman derived his views, though, from American mental hospitals "of a size and a degree of dehumanization unknown in Western Europe", and his implicit thesis that people are in institutions because, and only because other people put them there may relate to the fact that he had no experience of mental illness before there were anti-psychotic drugs. Nevertheless, little has been added to his analysis in the subsequent 25 years, and he is described here as still our best guide to the power of the institution and to the power of the individual to resist it.

Goffman is linked with Michel Foucault as the theoreticians whose ideas about the human condition and the mechanisms of power have in fact been most relevant to the study of institutional care in many countries. Foucault is a very unreliable historian, of the changing demands for care. Contributors come from Britain, the USA, Canada, Austria and Singapore. The book is distributed by Methuen at £9.00.

more that of a prophet, proclaiming that social reform did involve some suppression of society's dissidents, the people in institutions can at least be seen as victims of their own sadistic instincts in those who manage them, and that oppressive institutional routines are damaging to the human personality.

The other critics of mental hospitals are Thomas Szasz ("the most acrobatic and elusive of writers"), Russell Barton – was his Institutional Neurosis "a new disease entity or merely an arresting semantic label?" – and David Rothman who found, not surprisingly, that institutions often fail to live up to their ideals, but that conspiracy theory will not account for their development. He attacks Foucault for confusing the theory of surveillance with its practice, and certainly seems to get his own facts straighter.

But there are many other kinds of institutions, and some of them equally "total". In *The Last Refuge*, which examined homes for the elderly, Peter Townsend's "juxtaposition of statistical material with acutely observed... individual experience was to set a fashion in social research", but also involved a theoretical gap between evidence and recommendations, in which the processes were intuitive rather than logical. Though he condemned institutions, no real alternative was offered for disabled old people without families. The remaining authors dealt with geriatric hospitals, hospitals for the mentally retarded, and prisons; Stan Cohen and Laurie Taylor's *Psychological Survival* is shown to draw useful attention to the dangers of long-term incarceration, but stereotypes the prisoners as heroic revolutionaries, when they actually saw themselves as unlucky entrepreneurs.

The one important omission is perhaps Franco Bassaglia, though his writings await a skilful translator. At the end, there is a brief distillation of each writer's wisdom, which alone is worth the book's price, but *Ideas on Institutions* could have such a devastating effect on that mélange of political indoctrination and woolly thought which passes for teaching in many sociology departments that it will probably only enter these academic one-party states in *sanitized* form.

Hugh Freeman

Hugh Freeman is senior consultant psychiatrist at the Hope Hospital and honorary lecturer at the Universities of Manchester and Salford.

Health care

The thirteenth in the London Papers Series published by Pion is a volume edited by M. Clarke entitled *Planning and Analysis in Health Care Systems*. It draws together a wide variety of analytic and planning methods that have been developed to address health care problems in recent years, particularly those with a spatial component. The integration of different approaches is seen as timely because the problems faced by health care organizations are growing more acute, in part due to financial stringency, but also because of the changing demands for care. Contributors come from Britain, the USA, Canada, Austria and Singapore. The book is distributed by Methuen at £9.00.

A better class of child

The Social Life of Britain's Five-Year-Olds: a report of the Child Health and Education Study by A. F. Osborn, N. R. Butler and A. C. Morris
Routledge & Kegan Paul, £19.95
ISBN 0 7100 9618 6

The Child Health and Education Study, which is charting the lives of 13,000 children born in 1970, is the third national longitudinal study of child development. Like the National Survey of Health and Development (1946) and the National Child Development Study (1958), it originated as a perinatal study but was subsequently extended to survey the children growing up. This volume looks at the subjects aged five and concentrates on three areas: the family, preschool education and day care, and maternal employment.

The book presents numerous detailed findings which are summarized by chapter, but it would have benefited from a unifying survey in conclusion. Nevertheless, a major unifying theme can be identified in the differential among five-year-olds in potential capacity to benefit from schooling. The analysis relates variations in general ability, vocabulary, and anti-social or neurotic behaviour to differences in background and experience, and clearly shows that children do not enter school on equal terms.

Concerning family background, socio-economic inequality had the greatest single influence on behaviour and ability, but there were modifying factors. Family structure was relevant, so that only children scored better on ability and vocabulary but were more often neurotic than those with brothers or sisters. Greater maternal education was also associated with better test scores, but maternal age produced no consistent pattern. Adverse effects on ability displayed by children in one-parent families were largely due to their poorer circumstances, but not entirely so, and the authors conclude that reduced adult-child interaction is detrimental to children's general ability and vocabulary.

Since previous research on preschool attendance and children's development has been inconclusive, this study sought to determine the effects of nursery or playgroup experience on test scores at age five. The performances of attenders and non-attenders suggested that preschool attendance does have positive effects on ability, although more on conceptual maturity and fine motor skills than on vocabulary. Among attenders, frequency of attendance was not related to ability but was associated with deviant behaviour. Those who attended more than five sessions per week had higher anti-social behaviour scores than both non-attenders and those who went less frequently.

The study found little erosion of the traditional division of labour in the home, so that mothers had to accommodate employment to domestic responsibilities. Children's general ability scores varied little with mater-

nal employment status, but vocabulary was depressed where mothers worked full time. Full-time work, especially manual, was also associated with enhanced risk of anti-social behaviour in the child, but so was the mother having given up employment within the previous five years. The authors suggest that the effects of different employment patterns probably most reflect the mother's own response to her situation.

A methodological departure in the book is socio-economic classification by a social index rather than the usual indicator of father's occupation. Scores from the eight-item index are grouped into five categories, from "most advantaged" to "most disadvantaged". The authors favour the index because it circumvents problems presented by poor occupational data and fatherless families. These are real benefits but, even so, 99 per cent of Social Class I are classified as "most advantaged" or "advantaged", and 96 per cent of Social Class V are "most disadvantaged" or "disadvantaged".

Conventional analysis is thus not without point and, moreover, the authors do not exploit the fact that the classes range across the advantage groups, so that by examining children and families who contradict expectations something new could be learned about how disadvantage may be transmitted from generation to generation.

Finally, the book concerns five-year-olds of a decade ago, and is thus a pointer to the past rather than a guide to the present. This is valuable still, particularly where there are earlier studies for comparison, but the large research resources which such studies consume would seem more justified if reports like this had greater currency. The CHES merits continued attention and support, but earlier reports of subsequent sweeps should be hoped for.

Robert Chester

Robert Chester is senior lecturer in social administration at the University of Hull.



Man at the Highland Games at Hazlehead Park, one of a number of recent works by veteran photographer Alfred Eisenstaedt in Aberdeen: portrait of a city (Mainstream, £9.95 and £6.95).

Marriage knots

The Ties that Bind: law, marriage and the reproduction of patriarchy by Carol Smart
Routledge & Kegan Paul, £6.95
ISBN 0 7100 9832 4

Taking as its starting point the proposition that women are oppressed and dependent within marriage and the family, this book contends that women's vulnerability is heightened by divorce and family breakdown and focuses on the ways in which the law reinforces women's dependence and vulnerability.

Carol Smart does not descend into "vulgar feminism", however. Just as she is a "vulgar Marxist" view which sees the law and legal system as direct instruments in the oppression of the working class, so there is a simplistic

view that it is the law that is the major cause of the oppression of women. The implication is that changes in the law are all that are necessary to bring about a major improvement in the position of women in society. The author contends that the situation is not so simple – the relationship between the law and the dependent status of women is an indirect one and the role of the law is ambiguous. Family law has changed and women are no longer subject to blatantly unequal treatment. However, the law remains biased against women in so far as it now assumes equality between men and women, so that by its very "neutrality" the law ignores the economic dependency and social vulnerability of women which is deeply rooted in marriage and family relationships.

The first part of the book consists of an analysis of the law relating to the family from the immediate postwar period to the present day. The author traces the changes in legislation and in the law affecting such matters as the division of family assets on divorce, maintenance, and the custody of children. She also considers the movement

in legal attitudes towards cohabitation, and the part played by the institutions of the Welfare State. Despite considerable changes which have undoubtedly been to the advantage of women, it is argued that the law and legal judgment remain firmly wedded to the model of the family as the proper destiny for women. All that the law has done is create a situation where husbands must maintain their obligations towards their wives (or ex-wives) until another husband comes along to take over those obligations. The only way that a woman can escape the economic hardship and social disabilities of single parenthood is to marry again. At best the law is ambivalent and contradictory towards women in divorce: there has recently been a reaction. Pressure groups such as the Campaign for Justice on Divorce and Families Need Fathers have argued that the legal balance has tilted too much in favour of women to the detriment of men. Carol Smart argues that the Matrimonial and Family Proceedings Act (which will become law in the autumn) is an attempt to appease these groups by encouraging the courts to pressurize women to become self-supporting after divorce.

In the second section of the book Carol Smart considers family law as it operates on a day-to-day basis in a large city, Sheffield (no "Middletowns" or "Grimethorpes" for today's sociologists). Interviews with practitioners in the divorce and family law business – solicitors, registrars and magistrates – are used to reinforce the argument of the first part of the book. The practitioners are shown overwhelmingly to accept without question the traditional structure of marriage and family roles and relationships. They "individualize" and "decontextualize" family problems from wider issues, so that the economic and social hardships of family breakdown remain "private". Wives or ex-wives, for example, are frequently seen as "financial burdens" as far as their husbands or ex-husbands (who have to support them) are concerned. But, as the author emphasizes, what never becomes manifest is why and how in our society women become financially dependent on men. Interviews with magistrates and observations of the

courts in action similarly revealed traditional stereotypes of women's and men's roles, where decisions were made on the assumption that men were breadwinners and women home-makers, emphasizing the continuing dependent status of women.

The author concludes by suggesting changes which would constitute a "feminist direction" for social policy and family law. This is very necessary, she argues, because of the growing strength of the pressure groups already referred to and because of the muddled state of family law following the piecemeal changes of the last decade. The proposals for reform of the law and in social policy are challenging but realistic. This cool and well-argued book is a fine example of the application of a lively sociological imagination to an important area of public (and private) life.

David Podmore

Dr Podmore is lecturer in the Social and Technological Policy Division of the Management Centre at the University of Aston.

BOOKS

Pleading insanity

Law and Psychiatry:
rethinking the relationship
by Michael S. Moore
Cambridge University Press,
£35.00 and £11.95
ISBN 0 521 25598 8 and 31978 1

In the United States, in the recent case of John Hinckley, Jr, the court accepted the opinion of the doctors that he was insane and accordingly acquitted him of the crime of attempting to murder President Reagan in 1981. The decision has provoked a furor and an eruption of the rumbling public hostility to psychiatry's role in the law.

The hostility is not confined to the protagonists of "law and order". Civil libertarians and radical psychiatrists are at least as hostile, not on the grounds that psychiatrists make the courts "soft on crime" but that their catch-all notions of mental illness generate paternalistic attitudes towards the rights as well as the responsibilities of offenders, and that their assessments of "dangerousness" which tend to be unreliable and of poor predictive value, impose a high risk of unnecessary detention on mental patients and offenders who are committed by the courts in accordance with their recommendations to long, indeterminate periods of detention in hospital or prison.

Psychiatrists naturally buck their own judgment in individual cases, even though the odds against their being right are apparently high; but they are sensitive in the face of this hostility. Dr Henry Steadman and his colleagues in the New York State Office of Mental Health recently reported in the *American Journal of Psychiatry* the findings of an interesting investigation into the factors associated with successful pleas of not guilty by reason of insanity. The only factor of importance turned out to be the finding of the pre-trial forensic examination. The clinicians were incredulous, for they saw themselves as infrequent disagreeers with the court. Moreover, they were convinced that the quite dramatic changes in the proportion of successful pleas of insanity during the decade 1970-80 covered by the inquiry were attributable to changes in court attitudes, particularly in reaction to adverse publicity surrounding a well-known case of a defendant who had murdered his parents, successfully pleaded insanity, and proceeded - shortly after his release from a special hospital - to murder his uncle and aunt. They were nonplussed to be shown statistical evidence to the effect that, following this *cause célèbre*, they themselves, rather than the courts, had become more reluctant to make a finding of insanity. Were fewer defendants "really" insane in the late 1970s? Were the clinicians reacting to the adverse publicity? Or were they taking unconscious account of what they supposed would be the judicial reaction to it?

In Britain, the President of the Royal College of Psychiatrists was recently provoked to write to *The Times* (May 15, 1984) *a propos* the case of Peter Sutcliffe who, despite the unanimous opinion of the doctors that he is suffering from a serious mental illness, was held responsible for his crimes. That decision was popular and the psychiatrists emerged from the argument with an unfortunate reputation for glibly and muddle-headedness which has naturally rankled. The President was able to point out that Sutcliffe has now been transferred to Broadmoor, which vindicates the psychiatric opinions and, most important of all, provides the opportunity for treatment under the safeguards of the Mental Health Act, 1983. He protests: "The majority of psychiatrists are actually hard-headed realists who do not seek to explain away or excuse criminal behaviour. They are asked difficult questions by society through the courts about responsibility for actions and its distribution through illness; the paramount concern is to offer treatment to a sick person and in the process to improve treatment, whether or not that individual is a criminal, or a liar, or both."

This nicely illustrates the confusion

of spheres that is the subject-matter of Michael Moore's impressive book. A reflective reconsideration of the relationship between psychiatry and the law is evidently called for and he splendidly provides it. There was a time in the early nineteenth century, he points out, when psychiatry and the law saw eye to eye on essentials. They shared the common man's conception of mental illness as "madness" or "insanity", identifying it only with the violent psychoses, the manifest "loss of reason", the total irrationality which blocks understanding and has for centuries excused lunatics from moral and legal responsibility for their otherwise wrongful acts. Freud's determinism, his theory of the unconscious and psychoanalytic explanations of behaviour set in motion a process of "conceptual imperialism" which has culminated in the familiar modern tendency to debate social issues in psychiatric terms and to replace the ideas of good and bad with the concepts of health and sickness. Post-Freudian psychiatry espouses a "biological" definition of mental illness which threatens to erode the pressures about the fundamental nature of persons which inform legal theory and

practice in ascribing rights and attributing responsibilities.

Lawyers do not go down without a fight and the protracted disputes over what, despite their practical importance, are essentially metaphysical issues, have left most on both sides, weary, ready to agree - albeit resentfully - that the disciplines are incommensurable, and anxious to get on with their own work. Moore points to a discernible flight from theory: on the part of psychiatrists to concentrate on improving the taxonomy of mental diseases or investigating the effect of various drugs in altering the symptoms of the various mental diseases; and on the part of the lawyers to the practical preoccupations of legal doctrine (statutory texts, judicial precedent, and so on) or to empirical studies of the psychological causes or historical origins of doctrines enacted into law, or of their social effects.

In Moore's view this flight is neither necessary nor possible. There are answers to the basic theoretical questions and these questions cannot be avoided. He offers to demonstrate that, "properly regimented", psychiatric and legal theory will be found still to

agree on essentials. Law and psychiatry are systems of thought that possess theories about minds and persons. Their theories are not the same in all respects but they do not differ in those respects that are most relevant to the issues that have traditionally divided lawyers and psychiatrists. "If lawyers and psychiatrists would but look (in a philosophical way) they would see that nothing in the psychiatric view of persons contradicts the law's presupposition that a person is a rational agent".

Moore reveals the systematic use in law (as well as in the closely related fields of morals and metaphysics) of the concept of a person, so that a consistent theory can be devised in it, and then describes the salient features of the theory. This procedure is what he understands by "regimenting", and he does a masterly job for the law in the space of about 50 pages. In the case of psychiatry he attends in the same way to those aspects of a psychiatric view of persons most challenging to the legal view. He gives close and extended consideration to the concept of mental illness, the existence of the unconscious, the nature of psychoanalytic explanations and the psychoan-

alytic theory of the divided self. In each case he assesses the challenges when each is properly "regimented" and psychiatry.

This finding is of prime importance, for it puts lawyers and psychiatrists on the same side - the side of the Anglo-American philosophical tradition which traditionally defers to science as come to question science's credentials. And Hübner interweaves a number of helpful descriptions of episodes from the history of science with his philosophical narrative. But, in spite of these virtues, I suspect that English-speaking readers will find Hübner's book lacking in philosophical sophistication.

For example, on the question of the standing of his own claims about science, Hübner suggests that even if we cannot take first-order scientific claims about the world at face value, we can at least be sure of "meta-theoretical" claims about how scientists who accept given theories will see the world. Correspondingly on the question of truth, Hübner finds room for a "relational" concept of truth - that is, truth according to a particular system of scientific thought - while insisting on the rejection of any "absolute" notion of truth. When it comes to the question of whether his account of science implies relativism, Hübner suggests that since scientific developments are driven by the elimination of underlying inconsistencies, science progresses by the increasing "harmonization" of systems of scientific thought. And in response to the worry that there is nothing in his story to validate the scientific tradition as a whole, as opposed to, say, mythical ways of thinking, Hübner contends that there are indeed many virtues in such alternative, non-technological modes of thought.

These are lightweight thoughts, generated by residual hankering for a philosophical standpoint external to science. Readers familiar with recent Anglo-American developments will be aware of their inability to withstand any serious philosophical pressure, and are likely to wonder whether Hübner's translators might not have done better to leave him in German.

Shapere's book also contains work available in another form, though in this case the material was originally in journals. *Reason and the Search for Knowledge* is a collection of twenty or so articles written by Shapere during the past thirty years. And in this case too, worthy though the material is, there is room to question whether it warrants re-publishing.

Not that one could accuse Shapere of lack of sophistication. Shapere sides with Hübner in his concern to reject absolutist views about scientific method without being driven to relativism. But he is not one to take refuge in lightweight banalities. Thus, there is nothing in Shapere of the idea that truth is only system-relative, or that other traditions of thought are as admirable as ours, or other such self-destructive bromides. We modern

BOOKS

Nature of truth

Critique of Scientific Reason
by Kurt Hübner
University of Chicago Press, £22.00
ISBN 0 226 35708 2
Reason and the Search for Knowledge:
Investigations in the
philosophy of science
by Dudley Shapere
Reidel, Dfl 155.00
ISBN 90 277 1551 3

Most people probably think that science finds out about things. But a little reflection on the history of science would quickly undermine their simple faith. Many past theories have turned out to be false in certain respects. Indeed, some of the most important of our theories, such as Newtonian dynamics, have turned out to be false in the most fundamental respects. If past form is anything to go by, trust in the findings of science would seem to be quite misplaced.

Should we then admire science for its methods rather than its results? According to Popper, for instance, the scientific method is not that it gets at the truth (it doesn't), but that it is always open to criticism. And other philosophers have other theories of the essence of scientific method. But this line of thought also fits ill with the facts of history. Past scientists seem to have changed their methods as much as they have changed their theories. True, there are periods during which good scientists have acted like Popperian falsificationists (or Baconian inductivists, or Kuhnian dogmatists, or whatever). But then there are other periods during which equally good scientists have adopted quite different methodological principles, or no discernible methodology at all.

But what then is distinctive about science, what then does direct the scientific enterprise? Both Kurt Hübner and Dudley Shapere argue that we should look to science itself to answer these questions. There is no external standpoint from which we can show that science gets at "the truth", or that science conforms to some absolute standard of "rationality". Rather, we should recognize that the scientific tradition is itself in the business of developing views about what counts as a good theory, and should abandon any attempt to derive a timeless final answer to this question by purely philosophical means.

Hübner's book has been something

Number sense

Mathematics for Everyone
by Laurie Buxton
Dart, £12.95
ISBN 0 460 04622 5

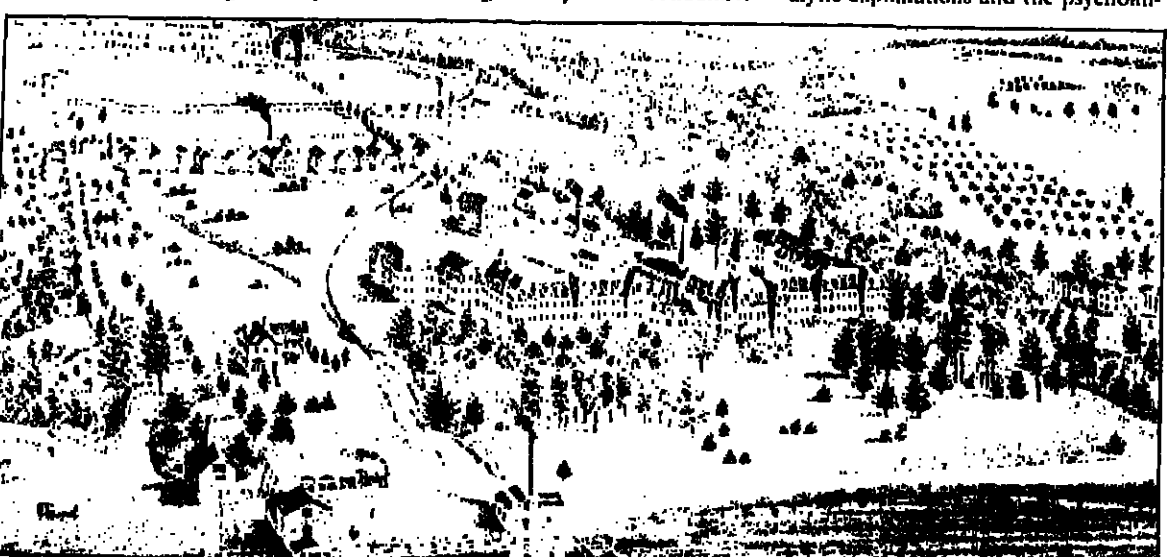
The desire to overcome the popular notion that the subject of mathematics is not readily accessible to the general reader has led to a number of contemporary attempts to introduce mathematics at this level. This attractive panorama of the book is fairly extensive. However, elementary numbers and calculation, geometry, algebra, the calculus, probability, set theory, matrices, conic sections, algorithms, problems solving as well as views on the nature and purposes of mathematics, the inevitable consequence of such a spread is that the depth of treatment is very varied.

Where the author does provide more extended treatments of topics, such as calculus, the material is presented in an interesting and stimulating way. In some cases, however, the treatment is so brief that I wish that the book had been chosen a less broad canvas. For example, in one very fragmented chapter of just 14 pages, entitled "The story of calculation", the abacus is given 12 lines, Napier's rods 8 lines, logarithms 3 lines, the slide rule 9 lines, and the electronic calculator 18 lines. Also, it is sometimes difficult to perceive the

logic of the juxtaposition of topics which do not seem to be explicitly related, and this will present a difficulty for the mathematically uninitiated.

Indeed, it seems at times as if the author has been tempted to forget the readership at which the book is directed. For example, in an early chapter, "Back to basics", which is largely devoted to elementary ideas of numbers and calculation, we suddenly encounter an integral involving the logarithmic function. This may be deliberate shock tactics, but it is hardly likely to encourage the hesitant reader to read further. This is especially unfortunate, for it is not until the next page that the statement that the integral is "the formula for the number of primes up to any number" is correctly qualified by the epithet "approximate".

However, as so often happens where an author is not himself a practising historian, it is the use of historical references that is the least satisfactory aspect of the book. It is not just that historical material is viewed with the "anachronistic spectacles" of today, but that the material itself is not infrequently misleading or simply incorrect. For example, Greek numerals are confined to the later alphabet and are not "making improvements"; the Greek alphabet numerals are described as "a far inferior system" to that of the Egyptians; the relationship between tallying symbols and the later Chinese numerals, as presented, suggests a direct descendant; and Saccheri is said to be the "first to show other geometries possible". Cardan is said to have "recognised" the sign rule for multiplication (does this suggest



Willard Asylum for the Insane in western New York State, opened in 1869. From D. L. Rosenham and M. E. P. Seligman's *Abnormal Psychology*, published by Norton at £17.95.

Conflicts of value

Ethical Questions in
Brain and Behaviour:
problems and opportunities
edited by D. W. Pfaff
Springer, DM59.00
ISBN 3 540 90870 6

Based on a set of lectures given at the Rockefeller University and Cornell University Medical College by clinicians, philosophers and scientists, the essays in this book fall into two distinct groups. The first is concerned with questions arising within ethics (or morality), such as the conditions for informed consent to medical treatment, and in particular the special problems of applying the idea of informed consent to patients suffering from disorders of brain function or behaviour. The second is concerned with questions arising about ethics, such as the neural basis of value judgments, the present stage in the development of sociobiological theory, and the contribution of sociobiology to our understanding of ethical behaviour.

Section one seemed clearer and better argued than section two, the two contributions by Ruth Macklin being particularly stimulating. Writing from a department of community health, she discusses two aspects of the same problem - informed consent, especially with the cognitively impaired, and treatment refusals. And she treats a wide range of traditional concepts in medical ethics - such as autonomy, paternalism and "best interest of the patient" - in a way that must surely be helpful to clinicians faced with difficult ethical decisions. Her considerable positive contribution is not outweighed by her distortion of the history of moral philosophy. In common with many writers on medical ethics, Macklin finds it convenient to simplify western moral philosophy into two traditions: utilitarianism and the Kantian tradition; in so doing, she merges the social, aggregative principle of greatest happiness with an individualistic principle of beneficence.

and wrongly equates Kant's approach with a rights/duties tradition and a deontological tradition. Moreover, to say that "Utilitarianism is a straightforwardly empirical theory of morality" is to ignore the value judgments which must be made in assessing what will count as the best consequences for a majority or an individual.

Whereas the authors in the first section all assume that conflicts of value will inevitably arise in medical contexts, some of the authors in the second section assert with cautious optimism that developments in the neurological or behavioural sciences may make it possible to settle these value-conflicts. In the introduction, Fred Plum, chairman of the department of neurology at Cornell University, and Donald Pfaff, of the Laboratory of Neurobiology and Behaviour at the Rockefeller University, claim: "Increasing explanatory powers of the neural and behavioural sciences may eventually offer for the first time the opportunity for a closed, logical, system rationalizing choices of primary values. Naturalistic ethics deals with this possibility but is poorly elaborated". Naturalistic ethics, however, may be well enough elaborated to make one sceptical of this claim. These authors (and also Pfaff in his final essay) invalidly move from premises that we can easily accept - that there is a neural basis for ethical behaviour as for any other kind of human activity, and that scientists are making headway in understanding it - to the false conclusion that neurology (or any other science) could become a "closed logical system rationalizing choices" in other words, could tell us what we ought to do.

The other essays in section two are largely concerned with themes in sociobiology. As in the first section, there is much of interest, but the authors have taken less trouble to make themselves intelligible. The essay by Colin Beer of the Institute of Animal Behaviour at Rutgers University is another excellent example of what can come of the superposition between philosophers and biologists.

R. S. Downie

R. S. Downie is professor of moral philosophy at the University of Glasgow.

Hominid strategies

European Economic Prehistory:
a new approach
by Robin Dennell
Academic Press, £15.00
ISBN 0 12 209180 9

In what ways is this a new approach to European prehistory? It is certainly new in replacing dull technical prose with a highly colourful turn of phrase. To describe the Neanderthals as the "typically horrible product of a dank and murky gene pool in which the earliest upper palaeolithic peoples had most wisely refused to breed" may not be the epitome of academic convention, but it's certainly unforgettable. Throughout this very readable book Dennell casts such pearls among the faunal remains of prehistoric European swine.

It also claims to provide a new framework. Gone are the Lower, Middle and Upper Palaeolithic, cornerstones of prehistory, to be replaced by phases based on behavioural rather than typological criteria. Phase one covers a vast span of time prior to about half a million years ago, when hominids only sporadically occupied Europe. Phase two, lasting until approximately 30,000 years ago, shows the first permanent occupation of Europe by hominids, but hominids lacking the behavioural complexity of modern man. Phase three sees the emergence of fully modern behaviour, followed by a sequence of de-glaciation from 16,000 years ago, in which incipient food production develops. This leads to phase four: full food production.

What is new and valuable here is Dennell's reassessment of continuity and change in prehistory. Whereas earlier workers have viewed the Palaeolithic as a static period of hunting and gathering, with a clean break as agriculture swept across the continent, Dennell argues that the real discontinuity is with the appearance of anatomically modern man. The development of food production is seen as a continuation of indigenous human

adaptation to environmental circumstances. Apart from this, however, Dennell's new framework consists principally of shifting some boundaries by a few thousand years (no great matter for time-happy archaeologists). If the framework is not radically new, is the interpretation? Certainly it is economic, whereas previously it has been cultural. The prehistory of Europe is a story of changing subsistence strategies, not changing artefacts. Here Dennell's book opposes the people behind the archaeological record, something notably lacking in older texts.

The actual approach to economic prehistory, however, is by no means novel. Rather, it is a judicious mix of old-fashioned Cambridge paleoethnology, with its array of new definitions, and American middle-range theory, which is used to tear down the theories of the old framework of culture. The new approach is a mixture of narrative but often ignored in scholarly interpretations from a range of alternatives. For example, having dismissed on technical and theoretical grounds the adequacy of morphological and typological evidence to provide information on continuity and change among the Neanderthals, Dennell promptly uses data from the same sources to build an economic interpretation.

The main problem seems to be the need to tell a story about the past. Dennell is very aware that the archaeological and paleo-anthropological record of Pleistocene Europe cannot be directly traced to a human activity. The processes of adaptation can only be dimly discerned through archaeological analyses. However, the format of a book, "a sketch-map of a continent", is more suited to a narrative account than a specific analysis. It is therefore a pity that his admirable intent to go beyond prehistory as a success of one curious tribe replacing another is replaced by a more general strategy.

Without doubt this is the book for which you should go in order to learn about the problems of European prehistory - but you will probably not find the solutions.

Robert Foley

Robert Foley is a lecturer in anthropology at the University of Durham.

of a success in his native Germany. I can perhaps see why. It gives the reader a confident introduction to recent developments in Anglo-American philosophy of science, showing how even a philosophical tradition which traditionally defers to science has come to question science's credentials. And Hübner interweaves a number of helpful descriptions of episodes from the history of science with his philosophical narrative. But, in spite of these virtues, I suspect that English-speaking readers will find Hübner's book lacking in philosophical sophistication.

For example, on the question of the standing of his own claims about science, Hübner suggests that even if we cannot take first-order scientific claims about the world at face value, we can at least be sure of "meta-theoretical" claims about how scientists who accept given theories will see the world. Correspondingly on the question of truth, Hübner finds room for a "relational" concept of truth - that is, truth according to a particular system of scientific thought - while insisting on the rejection of any "absolute" notion of truth. When it comes to the question of whether his account of science implies relativism, Hübner suggests that since scientific developments are driven by the elimination of underlying inconsistencies, science progresses by the increasing "harmonization" of systems of scientific thought. And in response to the worry that there is nothing in his story to validate the scientific tradition as a whole, as opposed to, say, mythical ways of thinking, Hübner contends that there are indeed many virtues in such alternative, non-technological modes of thought.

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men and women work within the scientific mode of thought, and so have no serious option but to adopt the developing standards of truth or admirableness that the scientific tradition bequeaths us. It is true - indeed it is built into the scientific enterprise - that there is room for science to err on any particular issue. But short of specific reasons for doubting specific claims, this mere possibility of error is no reason for denying any particular thing that science says.

The trouble with Shapere is that in his sophistication he ends up saying very little at all. It is all very well being told that science itself develops views about what counts as a good theory, and that there is no advantage standpoint by which to transcend such views. But this leaves important questions unanswered. In particular, it fails to tell us what is wrong with those people (and there are plenty of them) who don't go along with science's claims.

What Shapere fails to recognize is the need to make some concessions to the naive attitude that scientists find out about things. If there is something right about science, and wrong about people who reject it, it is surely that in some sense the claims of science correspond to the facts better than those of other modes of thought. Shapere does at one point allow that

there is some significance to the notion of truth as correspondence, but for him this lies merely in the thought that science might always be wrong. Fallibility is indeed a corollary of the correspondence notion of truth, but it is scarcely the essence of the notion, and by suggesting that it is, Shapere shows he does not take the idea of correspondence seriously, and renders himself unable to explain what is worthwhile about the scientific tradition.

Of course, such an explanation of the worth of science is itself best given from within science. Realism about science should itself be located as part of the scientific world-view. Such an "internal" realism would be consonant with Shapere's general line of thought. But Shapere himself does not develop it. And, ironically, in thereby suggesting that the claims of science do not correspond to anything beyond themselves, he cuts the ground away from under his own feet. For science itself disagrees, and Shapere, for all his sophistication, ends up defending a philosophical position which stands outside science.

David Papineau

David Papineau is lecturer in the history and philosophy of science at the University of Cambridge.



Mithras Saecularis (Housesteads, Northumberland). From Martin Henig's *Religion in Roman Britain*, published by Batsford at £25.00.

Iron beneath the velvet

Presenting Science to the Public
by Barbara Gastel
ISI Press, £17.95 and \$11.95
ISBN 0 89495 028 2 and 029 2

Public understanding of science is one of those good things of which we always seem to have too little, and feel that we could never have too much. With the best will in the world, we educate and popularize - and are continually disappointed with our meagre achievements. This feeling of frustration may not be justified for scientific knowledge is vast, and only accessible in fragments. The question is not how much people ought to know, but how they approach and grasp the information they need. All the same, most scientists are distressed at public attitudes towards science, and would like to change them.

That Utopian project is possibly a little arrogant. The public has its own views on what it wants or needs to know about science, and its own motives in opening or closing its mind to our messages. There can be no improvement in the public understanding of science without a parallel improvement in the scientist's understanding of the public, and a humble accommodation to its ways.

This humility can begin with the

form of the information to be presented. The first essential is simple, clear writing and speaking, tuned to the wavelength of your audience. Is that an inborn art, associated with a talent for simple, clear thinking, or can it be learnt as a craft? Barbara Gastel's practical hints on "writing effectively" are as wise as any such precepts can be, and most effectively presented. Do not be deceived by the gentle and easy tone of this book, with its delightfully apt cartoons, and its helpful lists of those ponderous wordy phrases that "have the capacity to have negative effects on optimal elucidation" - sorry, "can harm good explaining". There is iron beneath the velvet. The basic principles of good writing are perfectly straightforward: the difficulty is to discipline yourself to apply them ruthlessly to every sentence and paragraph.

But there is far more to the business of presenting science to the public than an inarticulate and illiterate scientist trying to compose intelligible messages to be sent to non-scientists. This book describes the professions and institutions through which these messages are transmitted - the science writers, the editors, the television and radio reporters, the publishers, the newspapers, and the broadcasting media. Both science and society are now so complex that the interface between them has developed its own specialized organs and functions. The modern working scientist has no direct channels of communication with the public. All that he or she would like to say is filtered through an elaborate network of minds and machines, and may come out on the other side quite differently from what was intended.

Can these distortions and misrepresentations be avoided? Probably not. Scientific and popular notions and attitudes may be so ill-matched that messages cannot be transmitted between them unless they go through several stages of reconstruction. Indeed, some scientific institutions now find it necessary to have their own internal "Public Information Offices" to mediate between their scientific employees and the representatives of the media. Nowadays, when informal procedures break down, there seems no alternative to a bureaucratic fix.

It is evidently quite essential for scientists to understand the work of professional science journalists, and to collaborate sympathetically with them. Gastel's main concern is with the practical problems that can arise when either party demands too much of the other in this uneasy partnership. Again, do not be deceived by her free and easy tone of voice. Her advice is quiet, but shrewd. More often than not, it is, simply, "Think it possible you are mistaken". It is well to realise, for example, that journalists have no control over the cuts made by editors to fit an article into the page, and are often as horrified as their scientific friends by the sensational headlines under which their sober stories appear.

Although popularization of science is a worldwide activity, it does have its cultural variations. This book is written for American conditions, where there is less serious science on television than in the newspapers, and where the radio is rubbish. In Britain, the prime media for science features and news are television and radio, but even our quality national newspapers may do quite as well as their American counterparts. In fact, for all our griping about sensationalism, triviality and anti-science bias, contemporary British science writing is something to be proud of. Our science writers themselves may not feel that way because they are squeezed between two antipathetic communities, with contradictory values. To the scientists they are representatives of the media, whose activities seem so wild and irresponsible: to their own editors, on the other hand, science writers seem as specialized and marginal to real life as science itself. Their difficult job should be aided by this admirable little book, which tells the rest of us how it is actually done.

John Ziman

John Ziman is a visiting professor in the department of humanities and social and economic studies at Imperial College, London.

A research bibliography has been compiled by Felicity Henwood and Graham Thomas of the Science Policy Research Unit and published as *Science, Technology and Innovation by Wheatshaf Books* (Harvester Press) at £28.50.

Graham Flegg is reader in mathematics at the Open University.

Universities continued

UNIVERSITY OF ZIMBABWE

Applications are invited for the following posts:
PROFESSOR/ASSOCIATE PROFESSOR/SENIOR LECTURER/LECTURER in the following Departments:
DEPARTMENT OF CHEMISTRY: (Physical)

Applicants should hold a doctorate in Physical Chemistry. Those applying for a professorship should have a sustained record of international excellence in their specialist area of research. The successful candidate will be required to teach in physical chemistry at undergraduate and postgraduate level and to conduct research in physical chemistry.

DEPARTMENT OF HISTORY:
 The prospective candidate should be in a position to teach the Economic History of Western Europe, the Americas, the underdeveloped world and Communist economies. The ability to teach wartime economy and technology will be an added advantage. Those applying for a professorship should have a sustained record of international excellence in their specialist area of research.

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DEPARTMENT OF HISTORY:

Two posts available on a two-year contract with possibility of renewal.
POST A: Applicants should hold at least an MA degree and should have a general ability to teach military history and contemporary international security. A specialist in the history of military and the theory of civil-military relations or in arms control would be an advantage.

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DEPARTMENT OF RELIGIOUS STUDIES, CLASSICS AND PHILOSOPHY (2 posts):

POST A: This post may be related to Religious Studies and to Philosophy or, preferably, to both. Applicants should have a PhD or equivalent qualification and be conversant with teaching with a specialisation in at least one of the following: History of Religion, Marxist and 20th century Theology.
POST B: This is a Philosophy post. Applicants should have a PhD or equivalent qualification with the ability to teach a wide range of courses and a specialisation in either Moral and Social Philosophy, the Philosophy of Religion, or the Philosophy of Language.

DEPARTMENT OF CURRICULUM STUDIES (Physiol):

This post is being funded by the Nuffield Foundation for one year. There are, however, possibilities of extending the funding for another year. Applicants must have a Master's degree in Physics Education and preferably must have taught the subject successfully at undergraduate level. The successful candidate will be expected to design an undergraduate Physics course as an advantage.

DEPARTMENT OF CURRICULUM STUDIES:
 Applicants should be able to function in the area of teaching African languages (both as first and second languages) to Graduate Certificate in Education and Bachelor of Education degree students. Teacher training experience and ability to teach at least one area of curriculum theory at postgraduate level will be an advantage. The areas offered at this level are: curriculum design, curriculum change, curriculum evaluation, curriculum planning and supervision. Candidates who wish to be considered for Staff Development Fellowships may also apply.

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Applicants should have a postgraduate degree (or equivalent) with several years of industrial experience. Possession of a higher degree and teaching experience of an Engineering Institution will be an added advantage. The successful candidate will be required to teach with instruction of students in Telecommunications with particular reference to Digital techniques.

DEPARTMENT OF COMMUNITY MEDICINE (Dentistry):

Applicants should be dental practitioners preferably with a higher qualification in Public Health dentistry to fill this post. The successful candidate will have experience in dental practice in a developing country and will be expected to teach medical, pharmacy and post-basic nursing students the elements of community and preventive dentistry.

DEPARTMENT OF SURGERY (Orthopaedic Surgery):

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 Applicants should have a doctorate. A clearly defined research should accompany the application. Appointment will be for two years initially.

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 Senior Lecturer: 2177,880 x 504-520,400
 Lecturer: 2104,440 x 456-488,368 x 504-517,376

NB: Staff appointed to the Department of Electrical Engineering receive a Professional Supplement payable as follows: Senior Lecturer 252,700; Associate Professor 252,400; Professor 251,800 per annum.

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Associate Professor: 2481,732 x 636-62,640 x 618-62,672
 Senior Lecturer: 2321,168 x 594-61,732 x 636-62,640 x 618-62,672
 Lecturer: 2218,168 x 456-488,368 x 504-517,376

Other:
 Senior Research Fellow: 2213,020 x 462-481,464
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Appointments on above scales according to qualifications and experience.

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Closing date of receipt of completed application forms in Zimbabwe is 17th August 1984.

(16823)

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Closing date for receipt of completed application forms is 17th August 1984.

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(16823)

Applications are invited from suitably qualified persons, regardless of sex, race, colour or national origin for appointment to the following posts in Graduate School of Business Administration, situated on a self-contained campus in the heart of Johannesburg which is a large cosmopolitan city and financial centre of South Africa.

Chair of Business Administration in the Field of Marketing

Applicants should be able to develop and teach courses in Marketing, Retailing and related areas in the Master of Business Administration, Higher Diploma in Personnel Management and Executive Programmes, and to stimulate and supervise postgraduate research. A Doctorate knowledge of the South African market is essential. Ideally the successful candidate will have had some practical and teaching experience in retailing.

Chair of Business Administration in the Field of Financial Management

The Professor of Finance will be involved in the following activities: the development and teaching courses in Finance on the MBA, HODM, PhD and Executive Development Programmes, and participation in research supervision.

Applicants should be senior academics with international reputation and contacts in the area of Corporate Finance, International Finance and Investment.

The total emolument attached to these posts is within the range: Professor: R25,884-R33,888 per annum.

The initial salary and level of appointment will depend on qualifications and experience. A salary supplementation may be payable where appropriate.

Benefits include an annual bonus - generous leave - pension - medical aid - a housing subsidy (if eligible) - remission of fees for dependants attending the University - removal, travel and settling-in allowances may be payable.

Duties to be assumed as soon as possible.

Applications should be lodged by 31st August 1984.

DEPARTMENT OF HISTORY

Lecturer in Economic History

Preference will be given to candidates able to offer courses in the Economic History of the United States of America at third year, graduate and Honours levels, and to assist with our first year course on Britain, America and the international economy since 1850. This is a permanent position.

The total emolument attached to this post is within the range: Lecturer: R14,176-R24,834 per annum. The initial salary will depend on qualifications and experience.

Applications should be lodged by 15th August 1984.

For the relevant information sheet contact Mr Geoff Henning, South African Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE England.

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UNIVERSITY OF THE WITWATERSRAND

THE UNIVERSITY OF ASTON IN BIRMINGHAM

Director of Library and Information Services

The times they are a changin'.

and nowhere more rapidly than in Library and Information Services. The University wishes to appoint a Director who can meet the challenges of the information revolution, pioneer new methods, assimilate twenty-first century technology and build surely on the University's current highly-computerised foundations.

To provide enhanced, modern services against a background of escalating book and periodical costs, and tight University budgets, will require management and professional skills of a high order.

This professional-level post consequently demands a track record in advanced library and information management, gained in higher education, industry, commerce or government, complemented by familiarity with computer hardware and software, and operational research and modelling techniques for financial and operations management. A continuing personal research interest in library and information science is expected.

If you have these qualifications and could be a dynamic, persuasive advocate of library and information services in the University, please contact: Further information: The Staff Office (quoting Ref. 84/180), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. (Telephone: 051-359 8511 Ext. 4564).

Closing date for the receipt of applications is 27th July, 1984.

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Cranfield
Royal Military College of Science

RMCS, Shrivenham in Oxfordshire provides a range of undergraduate, postgraduate and post-experience studies and supports an active research programme. From 1 August the College will be a faculty of Cranfield Institute of Technology.

Senior Lecturers/Lecturers Power Electronics and Electrical Drivers

required for the School of Electrical Engineering and Science in modern electrical drives. You will join a well resourced power electronics and electrical drives group whose main interests are in the power applications of stepping and brushless motors. Whilst you will be expected to teach at all levels the school has outstanding facilities and opportunities for research, development and consultancy in modern electrical drives and their control. (Job Reference GEI/42)

Informal enquiries about this post to Professor C J Harris or Dr R F Colyer on Swindon 782851.

Hydraulics and Fluid Mechanics

required for the School of Mechanical, Materials and Civil Engineering to be based in its engineering group. Responsibilities will include design and teaching of undergraduate courses in hydraulics up to final year honours engineering degree standard; contributing to fluid mechanics teaching; teaching on army staff courses; undertaking research; and seeking support for research projects. There are excellent hydraulic and fluid mechanics laboratory facilities.

Candidates should have a good degree in Engineering, appropriate experience (preferably industrial), Chartered Engineering status or likelihood of obtaining this in the near future. Practical experience of using numerical methods and/or models in design of hydraulic structures and advantage, knowledge of hydrology would be useful. (Job reference GEI/77)

Preference will be given to candidates able to offer courses in the Economic History of the United States of America at third year, graduate and Honours levels, and to assist with our first year course on Britain, America and the international economy since 1850. This is a permanent position.

The total emolument attached to this post is within the range: Lecturer: R14,176-R24,834 per annum. The initial salary will depend on qualifications and experience.

Applications should be lodged by 15th August 1984.

For the relevant information sheet contact Mr Geoff Henning, South African Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE England.

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Universities continued

UNIVERSITY OF LANCASTER

Department of Environmental Science

Recent concern with environmental issues such as Acid Rain, Estuarine Pollution and the disposal of nuclear waste have highlighted the need for new initiatives in Environmental Science and Technology. The University is responding by inviting applications for several important new appointments.

1. A new Chair in Environmental Science with preference for candidates with a background in Environmental Chemistry. The successful candidate will have extensive research and administrative experience and will be expected to lead and co-ordinate existing teams working on chemical pollution in both natural and urban environments. An associated 'New Blood' appointment in Atmospheric Chemistry has recently been advertised. (Ref. L0871).

2. Lecturer in Environmental Control and Systems. The successful candidate will be either an Engineer, Scientist or Mathematician with strong automatic control and systems background. The appointee will be encouraged to pursue research in areas such as stochastic modelling, adaptive control and remote sensing. (Ref. L0881).

3. Lecturer in Environmental Science and Geophysics, with preference for candidates in the area of Environmental Fluid Dynamics who have research interests in areas such as the dispersion of pollutants in the atmosphere, rivers and marine waters. (Ref. L0891).

4. Lecturer in Environmental Science and Ecology with preference for candidates with experience in Applied Soil Science, including Subsurface and Groundwater Processes. The successful applicant will be expected to take a research interest in environmental areas such as waste disposal and land reclamation. (Ref. L1001).

At Lancaster, Environmental Science is treated as a single integrated scientific discipline concerned with the quantitative study of environmental systems in seeking solutions to man-made problems producing Students who can handle problems which transcend conventional scientific and administrative boundaries.

Applicants should have sympathy for this innovative approach and be prepared to develop research and teaching programmes which exploit the special nature of the Department.

For Post No. 1, the salary will be within the Professorial Range, Posts 2-4, the salary will be on the Lecturer Scale (£7190-£14125 under review).

Further particulars may be obtained (stating the appropriate reference number) from the Establishment Office, University House, Bailings, Lancaster LA1 4YW where applications should be sent by NOT LATER THAN 1 AUST 1984.

Please note that nine copies of applications are required for Post No. 1 and six for Posts 2-4.

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UNIVERSITY OF THE WEST INDIES

Applications are invited for the following posts:
PROFESSOR OF APPLIED ECONOMICS, Mona, Jamaica

Applicants should be qualified in Economic Theory and one or more of the following fields: Quantitative Techniques, Econometrics, Operations Research and Modern Economics. Duties to be assumed by 1st September, 1984, or as soon as possible thereafter.

PROFESSOR OF SPANISH, Mona

Applicants should be well qualified in one or more of the following areas: Language, Latin American Literature and Peninsular Literature. Duties to be assumed 1st September, 1984.

DIRECTOR, SCHOOL OF VETERINARY MEDICINE, MOUNT HOPE MEDICAL COMPLEX, Trinidad

At this stage of its development the School of Veterinary Medicine will form part of the Faculty of Medicine, University of the West Indies. The person appointed will be responsible for development of the new School, for which purpose he will be required to work closely with the Task Force responsible for the planning and implementation of the Mount Hope Medical Complex. Duties to be assumed as soon as possible.

SENIOR LECTURER/LECTURER IN PHYSICAL CHEMISTRY, Mona

Successful applicant will be expected to participate in the teaching and organisation of the courses in the Department and to contribute to its research programme.

LECTURER/ASSISTANT LECTURER IN OBSTETRICS & Gynaecology, Mona

Successful applicant will teach students for the MBBS degree in co-operation with the clinical staff of the University Hospital and will also be required to teach in the postgraduate Diploma and Degree programmes of the Department. He/she will be eligible for appointment as a Consultant in the Hospital and in that capacity would be in charge of Hospital beds and out-patient clinics. Honorarium of J\$2,796 per annum would be payable. All University Hospital Consultants who own and operate a motor vehicle are also paid a travelling allowance of J\$1,200 per annum by the Hospital. Duties to be assumed as soon as possible.

LECTURER/ASSISTANT LECTURER IN ANAESTHETICS, Mona

Applicants must be graduates of a recognised medical school and have a medical qualification registered in Jamaica. They should have the FFARCS diploma or its equivalent. Successful applicant will be eligible for appointment as a Consultant in the University Hospital and in that capacity would be in charge of Hospital beds and out-patient clinics. Honorarium of J\$2,796 per annum would be payable. All University Hospital Consultants who own and operate a motor vehicle are also paid a travelling allowance of J\$1,200 per annum by the Hospital. Duties to be assumed as soon as possible.

LECTURER/ASSISTANT LECTURER, DEPARTMENT OF BOTANY, Mona

Applicants must possess a first degree in Botany or Agricultural Botany. Preference to applicants who hold postgraduate qualifications and have teaching experience in Crop Genetics, Plant Breeding and Cytogenetics. Duties to be assumed as soon as possible.

Salary Scales: Director/Professor (Medical) in range T\$101,656-117,888; Professor (Non-Medical) in range J\$3,340-47,194; Senior Lecturer (Non-Medical) J\$29,532-32,537; Lecturer (Non-Medical) J\$25,532-28,537; Assistant Lecturer (Non-Medical) J\$21,532-24,537; Senior Lecturer (Medical) J\$27,070-32,537; Assistant Lecturer (Medical) J\$23,070-28,537; Senior Lecturer (Medical) J\$23,070-28,537; Assistant Lecturer (Medical) J\$23,070-28,537.

Up to five full passages (economy class) plus baggage allowance up to US\$800 on appointment and normal termination. Special allowance up to US\$300 for shipment of academic books and teaching materials on appointment. Unfurnished accommodation at 10% of parsimonious salary or optional housing allowance of 20% of parsimonious salary. Pension provision. Subsidised Health Service. Annual Study and Travel Grant for self, spouse and three children. Annual Book Grant. Transportation allowance to persons who operate a motor vehicle.

Detailed applications (three copies) giving full particulars of qualifications and experience, date of birth, marital status, and the names and addresses of three referees should be sent as soon as possible to: The Secretary General, Association of Commonwealth Universities (App), 36 Gordon Square, London WC1H 0PF. Further details obtainable from either source. (16823)

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Polytechnics continued

HUDDERSFIELD POLYTECHNIC

LECTURER II/SENIOR LECTURER IN LAW

Ref: ACA511
Applicants must hold a good Honours Degree in Law and be interested in the law relating to business. The successful candidate will be expected and encouraged to undertake appropriate research activity to support higher teaching.

PRINCIPAL LECTURER IN BUSINESS POLICY AND MARKETING

Ref: ACA512A
Applications are invited from persons with appropriate academic and industrial experience to teach Business Policy and Marketing to honours undergraduate levels. The successful candidate should be able to develop the subject areas by research, scholarly activity and curriculum development.

LECTURER II/SENIOR LECTURER

Ref: ACA512B
Applications are invited from candidates with relevant experience and qualifications to teach on the above course to honours graduates levels.

LECTURER II - Fixed term 1 year

Ref: ACA517
Required from 1st September 1984 to replace a member of staff seconded to industry. Applicants should be graduates in the hotel and catering field with management experience in hotel and catering companies, particularly in relation to restaurants and bars.

Department of Computer Studies and Mathematics
PRINCIPAL LECTURER IN COMPUTING

Ref: ACA519
Applicants should have a suitable postgraduate qualification and substantial research/teaching experience. The successful applicant will be expected to lead and coordinate the development of research and consultancy in the department, to conduct and promote scholarly activities, and to attract externally funded projects.

LECTURER II/SENIOR LECTURER

Ref: ACA530
The successful applicant will be required to specialise in Flexible Manufacturing Systems, joining a group who are currently developing an FMS centre in the Faculty of Engineering. Comprehensive plant including Robot is in progress. Recent industrial experience in this field and relevant academic qualifications are essential. Chartered Engineer status and a knowledge of robotics, relevant signal processing and software engineering is desirable.

Department of Mechanical and Production Engineering

LECTURER II/SENIOR LECTURER IN ENGINEERING DESIGN

(1/2 post)
Ref: ACA531
LECTURER II/SENIOR LECTURER/PRINCIPAL LECTURER IN COMPUTING AIDED ENGINEERING

Ref: ACA532
Applications are invited for these new posts from good honours graduates in mechanical/production engineering with appropriate industrial and/or research experience in CAD/CAM and Engineering Design respectively, to teach on postgraduate, degree and diploma courses. The Department is well recognised for its commitment to Engineering Design and Manufacture, and has some of the finest CAE and Design facilities in Higher Education. The successful candidate will join an enthusiastic team and be given every encouragement to develop appropriate applied research and consultancy.

For the Engineering Design post, it is expected that additional hours will be available to enhance the 1/2 post offered.

Department of Electrical and Electronic Engineering

LECTURER II/SENIOR LECTURER (1/2 posts)

Ref: ACA533/534
Applications are invited from highly qualified candidates to assist with undergraduate teaching duties. Applicants with experience in any light current area will be considered but the following would be of particular interest: computer engineering (hardware/software), signal/image processing, VLSI, microcomputers, robotics, artificial intelligence, Computer Science with a commitment to engineering applications, recent postgraduate students, or candidates with experience in electrical power engineering.

Salary (Bodies under review): £1,27,218-£11,568
£1,27,218-£11,568 (per) - £12,443
£1,27,218-£11,568 (per) - £15,744

For further details and application forms please send footplate SAE to: The Personnel Office, The Polytechnic, Queensway, Huddersfield HD1 3DH, to whom completed forms should be returned by 31st July, 1984. (16530)

RESEARCH ASSISTANTSHIPS

Salary: £5,649-£9,363 (pay award pending)

Applications are invited from candidates with or expecting to obtain a good honours degree in appropriate disciplines, for the following research projects:

Department of Mathematics, Statistics and Computing (Two Posts)

1. Mathematical prediction of the dynamic properties of vulcanised elastomers.
2. The role of Hadamard stability in the theory of rubberlike solids.

Research Assistants are expected to register for a CHA higher degree. Appointments are for a period of two years with a possibility of a third year (fixed year contract).

Application forms to be returned by Friday 27th July 1984, can be obtained from the Personnel Office, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AT. Tel: 0752 264639. (NB Please specify clearly for which project you are applying).

POSTDOCTORAL RESEARCH ASSISTANT (SERC)

Salary: £5,649-£9,363 (pay award pending)

The candidate is expected to be a mathematician/physicist with experience in numerical solution of nonlinear partial differential equations. An interest in experimental results in pattern formation would be an advantage.

Application forms to be returned by Friday 27th July 1984, can be obtained from the Personnel Office, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AT. Tel: 0752 264639. (NB Please specify clearly for which project you are applying).

Plymouth Polytechnic

Bristol Polytechnic

Law Department

Applications are invited for the following posts on the

LECTURER II/SENIOR LECTURER

IN COMPUTER STUDIES

(Post No. 184)

Applicants should have a good understanding of computer systems and programming. In addition, they should have a knowledge of the following areas:

Programming Languages: Level 1, Level 2, Level 3, Level 4, Level 5, Level 6, Level 7, Level 8, Level 9, Level 10, Level 11, Level 12, Level 13, Level 14, Level 15, Level 16, Level 17, Level 18, Level 19, Level 20, Level 21, Level 22, Level 23, Level 24, Level 25, Level 26, Level 27, Level 28, Level 29, Level 30, Level 31, Level 32, Level 33, Level 34, Level 35, Level 36, Level 37, Level 38, Level 39, Level 40, Level 41, Level 42, Level 43, Level 44, Level 45, Level 46, Level 47, Level 48, Level 49, Level 50, Level 51, Level 52, Level 53, Level 54, Level 55, Level 56, Level 57, Level 58, Level 59, Level 60, Level 61, Level 62, Level 63, Level 64, Level 65, Level 66, Level 67, Level 68, Level 69, Level 70, Level 71, Level 72, Level 73, Level 74, Level 75, Level 76, Level 77, Level 78, Level 79, Level 80, Level 81, Level 82, Level 83, Level 84, Level 85, Level 86, Level 87, Level 88, Level 89, Level 90, Level 91, Level 92, Level 93, Level 94, Level 95, Level 96, Level 97, Level 98, Level 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